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THE PROBLEM OF THE CHRONIC CRIPPLE *

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The increasing interest throughout the country in the problem of the chronic cripple creates an opportunity for this section to be of great service in shaping the future development of work for this class of sufferers. As knowledge of the fact that there are large numbers of people in every community who need orthopedic care increases, and as methods of treatment are perfected, a large number of men are going to select orthopedic surgery as a specialty, and will seek opportunities to equip themselves for this work. It seems to me that we of this section should be able to furnish some suggestions to such men in determining the nature of their equipment, and the best means of applying it to the needs of the cripple. In answering such questions, the fact must be emphasized that almost all our work in orthopedic surgery has to do with the treatment of the chronic sufferer, which means that our results are long delayed, often requiring years of painstaking care to detail for their accomplishment, and may be secured only by men giving the same enthusiastic consideration to the treatment of these patients which is so easily given to the treatment of the acutely ill. In other words, we have got in some way to keep ourselves working under the inspiration of a chronic enthusiasm as the only means by which we can meet the tremendous difficulties in the treatment of chronic diseases. Not only is such enthusiasm important on the part of the surgeon, but also it is of immense importance in its influence on our patients. If it is tiresome and discouraging to the surgeon to find results long delayed, how much more so is it apt to be to the patients themselves.

Such enthusiasm is of slow growth, and suggests that the orthopedic surgeon as compared with the general surgeon should have a longer period of preliminary preparation. Not only is this necessary for the development of a spirit of enthusiasm but also is it best for technical equipment.

As has been indicated, the results of our methods of treatment are slow in showing, and a thorough knowledge of them cannot be obtained except by studying the individual case for a considerable time in varying conditions of treatment, in the hospital, dispensary and home. The great volume of work for the cripple is done in the outpatient or dispensary department, and careful training in this work is as necessary as in the hospital. A large number never have any hospital treatment at all, and those who are admitted to the hospital stay for a short time in comparison with the duration of treatment, and under modern conditions, except in the case of country hospitals for joint tuberculosis, most orthopedic patients are admitted to the hospital for some form of operative treatment. During the past year I have made inquiries of seven clinics in various parts of the country as to the total number of patients treated in each clinic and what proportion of that number were admitted to the hospital for operation. The results of these inquiries have been most surprising, because in the larger clinics, and those which have been longer established, the percentage of patients admitted to the hospital for operation of the total number treated in the dispensary varied from 3 to 10 per cent. In a few instances, the percentage was as high as 18. The average percentage for the whole number was 10.

These facts have an important bearing on the question we are discussing. If the man's training is only in the hospital, his preparation for the treatment of the 90 per cent. of the cases which never enter the hospital is poor. There is a great deal more written about the 10 per cent. who have operations than the 90 per cent. who do not, and I think therein lies a danger to the future development of our specialty, that in the consideration given to the operative side of the work, we may neglect the nonoperative. I am not attempting to raise any question as to the value of operations in orthopedic surgery. There can no longer be any question that the operative aspect of our work is of great importance. All I am concerned about is that the vastly larger volume, the nonoperative, be not neglected. As a matter of fact, the greatest possible operative skill will be defeated in the accomplishment of the greatest amount of good for our patients, unless the man who exercises it has taken pains long before to perfect his equipment in the much more difficult and much more tedious nonoperative work.

Assuming, therefore, the proper training of the man, our second question is, What is the best means of applying it to the needs of the cripple?

This brings us to the question of organization, and I feel sure that from the standpoint of the cripple and his needs, the orthopedic surgeon can be more effective in meeting them in institutions wholly devoted to the treatment of the cripple. There are many communities throughout the country where such work is new and unfamiliar to the profession and the laity, and such places offer wonderful opportunities for men to initiate organizations ideally fitted to the need of the cripple;

* Chairman's address, read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

unhampered by the difficulties of attempting to do work for the cripple in a small and insignificant orthopedic department in a general hospital, the spirit and atmosphere of which I do not believe is most helpful to work of this kind.

130 East Thirty-Sixth Street.

TREATMENT OF CONSTIPATION

BY CONSERVATIVE SURGICAL CORRECTION OF RETARDATIVE DISPLACEMENTS OF THE COLON *

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It is no longer necessary even to affirm that constipation due to displacements, distortions or malformations of the intestines is frequently the cause of various forms of persistent ill health. The demonstration, clinical and pathologic, has been made so frequently and so conclusively that the relationship has become accepted as axiomatic and fundamental. It is no longer a matter of surprise when a progressive practitioner states that constipation is the underlying cause of successively systemic infection, toxemia, acidosis and terminal edemas. This new point of view has come to be accepted by the profession as explanatory of many chronic headaches, neuralgias and rheumatisms; of many anemias and neurasthenias; of many digestive troubles, including ulcer of the stomach; of various disorders of the secretory organs, such as Bright's disease and cirrhosis — conditions heretofore recognized as separate diseases but now known to be correlated results of a common origin, or, in other words, the effects of toxic or infectious states often originating in constipation. It is also now recognized that constipation has a contributing causal relation not only to these conditions, but to any or all so-called diseases, the inception or progress of which may be deleteriously influenced by general infection, or by toxemia with resulting acidosis. It is also recognized, thanks to the pioneer work of Bouchard, Glenard and Lane, that logical treatment of these conditions must begin with the correction of the initial anatomic disturbance.

Fig. 1.—Residual barium in stomach after twenty-four hours, visible duodenum, ileac stasis, coloptosis.

Fig. 2.—Marked coloptosis with ileac and colonic stasis shown forty hours after ingestion.

ANATOMIC CAUSES OF CONSTIPATION

As I have stated in previous publications, I have found, chief among causes of constipation, ptosis with retardative angulations of the colon, large, flabby and mobile cecum, dilated ascending colon, atrophied transverse colon, redundant transverse colon, retardative angulation at the splenic flexure, retardative angulation with or without adhesion at or near the terminal ileum, and redundancy with or without adhesions of the sigmoid. Each of these conditions, whether coexisting with other of the conditions enumerated or not, is organic; each is associated with tissue or structural change. Each condition must, therefore, find ultimate correction by physical means.

TREATMENT OF MECHANICAL STASIS

Hygienic and Medicinal.—There may be mechanical distortions of the alimentary canal which, because of their limited extent or because of the nonobstructive character of the resulting angulations, do not cause serious disturbance of function. These are the cases which, because of the limited extent and slight character of the distortion, produce less severe consequences —consequences that may be susceptible of temporary relief by hygienic and medicinal means. These, however, are not the cases that are referred to the surgeon, at least until after the temporizing means shall have failed to arrest the progress of the invalidism. They are not, therefore, the cases that are here under consideration. The cases that are here considered are those in which there is a demonstrated physical impediment to the fecal current, as shown by Roentgen-ray transit studies, and in which there is a demonstrated relation between the intestinal condition and the constitutional state and, finally, in which previous hygienic and medical treatment has failed either to bring relief or to arrest the progress of the invalidism.

I make this last remark largely in deference to the mistaken notion that it is always better to try everything else before trying surgery, and I say it in recognition of the fact that the day will come when a condition that is obviously surgical from the start will be given the benefit of surgical treatment before the health has become profoundly and dangerously impaired by dalliance with a futile therapy.

Surgical.—The central idea in surgical treatment of mechanical stasis is, as far as possible, to restore or reestablish the physiologic drainage of the intestines. It may not always be possible to accomplish this purpose for the reason that established pathologic conditions may be of such character as to make impossible the restoration of even a functional equivalent of the *status quo ante*. A cecum that has become dilated, flabby and hypermobile by distention due to retardative angulation at the hepatic flexure, a transverse colon that has become atrophied by prolonged enervation due chiefly to purgation, a mucous membrane of either the large or small bowel that has become the seat of deep interstitial and follicular infection, as in some cases of epilepsy, and a marked redundancy of any portion of either the colon or the sigmoid are examples of pathologic change that defy functional restoration.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

On the other hand, there are cases, for example, in which an angulating ptosis may occur in an otherwise fairly normal intestine, or in which a prolonged wasting catharsis has left at least some of the muscularis; or, in short, in which there is an apparent possibility of functional restoration. It is obvious that these two classes of cases present very different surgical problems. Thus, the hopelessly played-out, flabby and infected cecum, or the equally atrophic and infected colon ought, under favoring conditions, to be removed, while either or both of these structures, when obviously susceptible of restoration, ought to be given the benefit of helpfully reparative treatment.

It is considerations such as these that have resulted in the development of two classes of operations as follows:

(*a*) Radical measures, such as excision of the cecum, resection of the transverse colon, resection of the sigmoid, colectomy and the various short-circuiting operations.

(*b*) Conservative measures, such as the plication of the mesocolon, fixation of the sigmoid, gastropexy and omentopexy.

It is not my purpose to discuss the radical operations. The so-called conservative operations to which I have alluded, especially as they have ordinarily been done, have very generally fallen into disuse and, therefore, require no discussion. The fact remains, however, that there is a rational demand for some conservative procedure to assist in the functional restoration of the affected bowel.

Fig. 3.—Retardative angulation at hepatic flexure with adhesions between proximal surfaces in each curve of letter S. Ileac stasis marked. Exposure twenty-four hours after ingestion.

Fig. 4. — Redundance of the cecum (double cecum) and redundant sigmoid, not remediable by parietal implantation of colon.

Fig. 5.—Extreme coloptosis with ileac stasis thirty hours after ingestion.

PARIETAL IMPLANTATION OF THE COLON

It was for the purpose of meeting the clinical demand for some such procedure that I several years ago devised the operation for parietal implantation of the colon. The object of this operation was, as nearly as possible, to restore the ptotic colon and stomach to their normal position, and to keep them there indefinitely. In this way, it was intended to break up possible adhesions, overcome the retardative angulations, relieve the mechanical disturbance of the whole splanchnic circulation, give freedom to the peristaltic activity and thus drain away the toxic and infectious content of the tract. It was hoped to accomplish these purposes without sacrificial operation on any part of the intestines, while at the same time effecting an implantation to the properitoneal structures that would insure the maximum of permanency.

The essential steps of the procedure are as follows:

A. Lower Zone of the Abdomen:

1. Make a median incision from near the umbilicus to near the pubes. [This incision, closed, is shown only in Figure 7].

2. Explore the viscera, preferably in the following order: (*a*) cecum, (*b*) appendix, (*c*) first 12 inches of the terminal ileum, (*d*) ascending and transverse colon, (*e*) stomach, (*f*) sigmoid, (*g*) proximal intestinal surfaces, (*h*) pelvic viscera.

3. Break up any adhesions that may be found.

4. As far as possible, correct all peritoneal abrasions that may have been made by adhesions, giving particular attention to those, the correction of which may have resulted in exposure of the muscularis of the intestines.

5. Approximate the peritoneal margins and hold them together with hemostatic forceps until all work in the upper zone of the abdomen has been finished.

6. After completing all interference in the upper zone, close the lower incision by laminated chromic gut sutures, fortified with a few interrupted silkworm-gut sutures.

7. If there have been adhesions, particularly if numerous or extensive, put a liter of hypertonic salt solution into the peritoneal cavity just before completing closure by suture of the lower incision.

B. Upper Zone of the Abdomen:

1. Make an incision transversely across the intercostal interval about three-fourths inch below the tip of the ensiform cartilage, extending the same incision at an obtuse angle downward and to the right about a half inch below the costal margin for a distance of from 5 to 6 inches (Fig. 6).

2. The incision just indicated divides (*a*) the integument, (*b*) subcutaneous fat, (*c*) superficial fascia, (*d*) inner half of the left rectus, (*e*) all of the right rectus, and (*f*) the inner margins of the external oblique, internal oblique and the transversalis muscles, and, finally, (*g*) the transversalis fascia through the entire length of the incision, care being taken not to extend the incision along this line through the peritoneum.

3. Begin at the epigastric fat and dissect the peritoneum away from the transversalis fascia for a distance of three-quarters inch along the whole length of the incision (Fig. 6).

4. Evert the lower flap by seizing the transverse fascia at several points with deep bites of hemostatic forceps (Fig. 6).

5. Divide the peritoneum and the ligamentum teres along the lower line of denudation and bring the ligamentum teres out through a puncture at the base of the peritoneal flap (Fig. 8).

6. Explore the upper zone particularly with reference to (*a*) the stomach, (*b*) duodenum, giving special attention to frequent enveloping exudate, (*c*) gallbladder, (*d*) pancreas.

7. Put the patient in the Trendelenburg position, bringing the transverse colon and omentum out through the incision.

8. Stitch the omentum to the denuded transversalis fascia by stitching the base of the former by its external surface, to the lower margin of the denuded surface of the latter, employing a continuous-interrupted suture, and exercising care to avoid wounding or constricting important omental vessels (Fig. 8).

9. Close the wound by the following steps: (*a*) Stitch the margin of the upper peritoneal flap to the under surface of the transversalis fascia. (*b*) Approximate the divided ends of the muscles by continuous-interrupted sutures of chromic gut passed through the superficial fascia, muscle and transversalis fascia. (*c*) Fortify the last line of sutures with a few silkworm-gut sutures, passed through the fascial muscle and skin. (*d*) Close the skin according to the operator's usual method, that employed by the writer being preferably the continuous button-hole stitch with fine catgut.

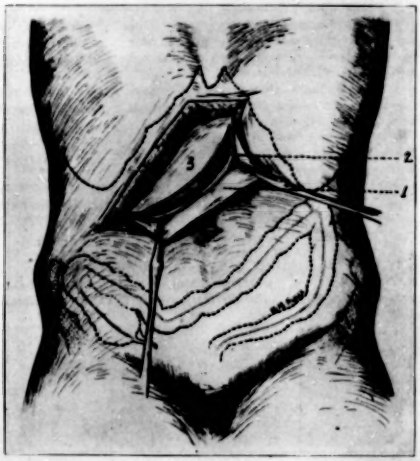

Fig. 6.—The incision in right upper quadrant: 1, everted lower lip of wound showing transversalis fascia; 2, margin of the peritoneum; 3, upper peritoneal flap.

Limitations.—It is not intended that this operation shall be adopted in cases the careful roentgenologic and clinical study of which shows that the perturbation of intestinal function may be controlled by non-surgical measures. It is not an operation to be justified by other than profound consequences of conditions, local and general, to which I have alluded.

It is not intended that this procedure shall in any way supplant the more radical operations to which I have alluded in cases in which the latter are demanded by conditions which I have described. On the other hand, it would not only do the patient no good, but would merely complicate later operation if, for example, parietal implantation were practiced on a colon so atrophied and so functionally dead that its subsequent removal were a necessity.

Results.—In the last nine years, I have done this operation 226 times in cases in which I have done parietal implantation alone, and sixty-two times in which I have combined it with other operations such as cholecystotomy, gastro-enterostomy, resection of the transverse colon, resection of the sigmoid, appendectomy, appendicostomy, cecostomy and for various conditions within the pelvis. I have had no death in cases in which parietal implantation was done alone. I lost one case in which sepsis developed from an infected gallbladder, two in which I also did resection of the sigmoid, and three in which I had to deal with complicating purulent conditions within the pelvis—a gross mortality of a little over 2 per cent. All of these fatal cases were of long standing, and in all of them there existed a profound and irreversible acidosis, death taking place by vasomotor paralysis. As a rule, the secondary or final results have been most satisfactory. In some of my earlier cases, I did not understand the significance of purgation atrophy of the colon and, consequently, did implantation when extirpation ought to have been done, with, of course, unsatisfactory results. In a few other of my earlier cases, I did the fixation to the parietal peritoneum instead of to the transversalis fascia, with the result that the peritoneum gradually loosened from the abdominal wall, permitting the colon to redescend into the pelvis. In a few cases that I recall, also among my earlier ones, I failed to appreciate the significance of an enlarged and ptotic cecum and thus compromised my results. I also at that time failed to grasp the purport of ileac adhesions with resulting ileac stasis which perpetuated constitutional symptoms that I had sought to relieve. I have had only a very few cases of recurrence, two of them having been traumatic and due to a fall.

Fig. 7.—The colon and omentum brought out through the operation wound by which the cecum is lifted to its approximately normal position.

On the contrary, I have had the opportunity to follow a number of these cases through several years, always with evidences of persistently good results. In a case in the practice of Dr. Patterson of Brookville, Ind., I did a parietal implantation of her colon seven years ago. She remained perfectly well until a

few months ago when it was found that she had developed an enormous fibroid. This was removed by hysterectomy. The large incision enabled me to inspect the colon which was found precisely in the position in which I had implanted it seven years before. This case is a sufficient answer to the aca-

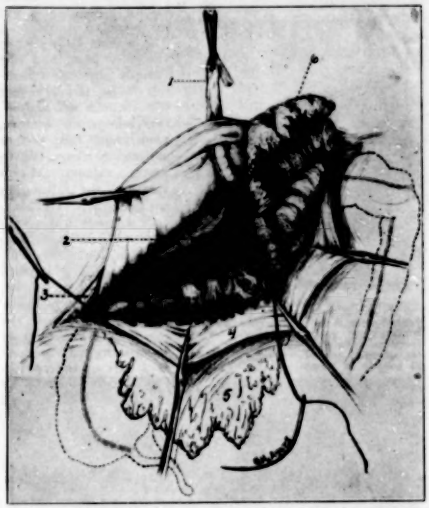

Fig. 8.—The implantation to the transversalis fascia is shown in progress, the fixation being effected by continuous-interrupted suture, care being taken as shown to avoid important vessels in the omentum: 1, ligamentum teres divided and brought out through the peritoneal flap; 2, margin of the liver; 3, colon covered by the base of the omentum; 4, transversalis fascia; 5, right half of omentum hanging in normal position within the abdomen; 6, left half of the omentum, the base of which has not yet been implanted.

demic criticism sometimes heard that this fixation cannot prove permanent.

I am convinced that in the great majority, I do not hesitate to say that in over 250 of them, results varying from marked improvement to functional cures have been realized. As already indicated, the restoration, more or less complete, of the bowel function is the rule, and with it a corresponding disappearance of the constitutional symptoms. In a large number of cases digestive disturbances have been overcome practically from the date of operation. The improvement in weight is generally marked, patients often picking up from 30 to 60 pounds within a few months after operation. Mental depression amounting in some cases to simple melancholia, which often exists in these cases before operation, is generally overcome with great promptness. The same may be said to be true of headaches, neuralgias and various of the rheumatoid conditions that depend on toxemia of intestinal origin.

Union Central Building.

ABSTRACT OF DISCUSSION

DR. FRANKLIN H. MARTIN, Chicago: A few fundamentals should be emphasized: First, all displacements of the colon and stomach shown by roentgenograms do not necessarily lead to serious symptoms; second, adhesions in the abdominal cavity do not necessarily indicate that pathologic conditions exist which should be relieved; in other words, they do not lead to symptoms. The first is illustrated many times in the open abdomen and particularly by the pictures shown by Dr. A. J. Ochsner at the Clinical Congress in Boston. Many pictures of ptoses were shown where there were no symptoms. The second is illustrated every day as we open the abdomen when we encounter adhesions everywhere with no symptoms arising from them. What gives rise to symptoms? Displacements of these organs with fixation in disadvantageous positions; adhesions causing kinks and holding viscera in disadvantageous positions, this, in turn, making more kinks and interfering with function. How does nature seek to cure these difficulties? This is answered by the way nature hangs up the colon when the animal assumes the upright position—by peritoneal fusion. Therefore, if it is necessary to make a pexy, or to hang up anything, in the abdomen or pelvis, it is proper to hang it up by the peritoneum, because that is the way it is done by nature. Few of these cases require operation; it is only those cases in which the viscera are held in disadvantageous positions. What is our experience with pexies, with the hanging up of viscera in the abdomen when it becomes necessary to do something because of ill health? We may not be able to restore such patients to a normal condition, but we can restore them to a more nearly normal condition. What is our experience in the best way of doing this? It is by operations which secure peritoneal fusion. Any shortening of the round ligament of the uterus that does not include the peritoneum with the round ligament will be a failure always. Any shortening of the sacro-uterine ligament which does not also include the peritoneum will be a failure. In the few cases in which we have had to do pexies, how do we do the operation to get the best results? The few times when we have found it neces-

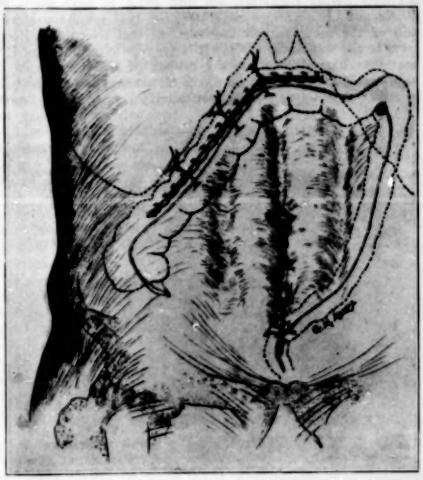

Fig. 9.—Both incisions closed with the colon in its restored position.

sary to suspend the stomach and the intestines we were surprised at the success we got in the hammock operation of Coffey, notwithstanding we always dread to do it. I have done a number of hammock operations under mental reservation but have always been agreeably surprised at the result. The operation that secures the stomach to the abdominal wall is an operation that one dreads to do, but it is almost invariably successful when the indications are clear for any kind of an operation.

DR. ROBERT T. MORRIS, New York: Surgery is a brutal way of overcoming what the internist overlooks. In dealing with ptosis cases in general, we have to consider two very important factors: (1) the group of susceptible individuals predisposed, and (2) a matter which has been overlooked very generally by the profession until recently; that of anaphylaxis. Unless we can take these cases as a whole and make a very elaborate analysis, ruling out—and here is the point—the peripheral irritations and the focal infections, we shall not lessen a patient's ills much by doing any one operation. We have to include the psychic feature also. You may do almost any operation on a patient with epilepsy and that patient will feel better for months. If you report your cases quickly enough you will have a brilliant series to report, but if you wait a year you will have less satisfactory results. The day is coming when we shall have either a Cabot syndicate system or, as I prefer, we shall make up a report on any case in the form of a brief, very much as the lawyer makes up a brief for presentation to his client. The consultant of the future is to group together the ideas of various specialists and then gradually deduce his conclusion. To do a pexy for the relief of a condition which has neurasthenia as an incidental factor, not causative, may be a surgical mistake. When concentrating our attention on causative factors the surgeon is similar to any other therapeutic resource which assists the general practitioner, very much as he would be assisted by the employment of a dose of salts. The surgeon is a therapeutic resource in cases of neurasthenic or psychasthenic patients with ptoses.

DR. EMERY MARVEL, Atlantic City, N. J.: The colon is the most susceptible part of the intestinal tract to stasis. Dr. Reed has mentioned the enlargement of the caliber of the cecum and passed the reduction of its caliber aside by infolding. To that position it seems to me proper to take exception. In the pictures presented by Dr. Reed each case showed, not only before operation, but also after, to have stasis in the cecum. It seems to me, therefore, that some consideration of the cecum might be added to that which Dr. Reed gives to the transverse colon. It is from results following the operation of reduction of the caliber of the cecum that I have found much benefit to accrue to patients inconvenienced by stasis of this type. If the peritoneal covering of the bowel only be coapted, it will probably be followed by stretching, but should sutures be applied to the longitudinal bands, the nonelastic striae, there will not be any stretching. You, no doubt, have observed that most of the distention in the cecum is below the ileocecal valve; this can easily be reduced by inserting the sutures obliquely, which when lightened will draw the pouch up and obliterate it. I suggest this procedure as a consideration with Dr. Reed's paper, so when the bands of adhesions are cut a few additional moments only would be necessary for reducing the caliber of the cecum.

Fig. 10 (same case as Figure 5).—Normal position of colon ten months after parietal implantation; from two to three normal evacuations daily; 48 pounds increase in weight.

DR. CHARLES A. L. REED, Cincinnati: The question of susceptibility to this displacement has some foundation. There are certain flabby persons who are ptotic because of their flabbiness. There are certain of these cases, especially redundancies, which are congenital. But the case of the very heavy man who as a baggage lifter had one of those heavy trunks suddenly precipitated on him, caught it on his abdominal muscles and, while he had had previously perfectly healthy alvine function, suddenly developed constipation and all of its sequelae, was obviously traumatic. These ptotic conditions are common in shopgirls and in women in various employments calculated to bring persistent downward pressure on the viscera. The question of predilection, so far as the predilection is made to mean heredity, is obviously not of very broad application. The psychic factor is not much of a determining factor in these cases. No one, by taking thought, can put his bowels out of joint. The woman knows when she has pain and the various physical difficulties to be found among the sequelae of abdominal lesions. Therefore, you cannot talk such a patient into a cure. When there is a functional restoration, the talking is not necessary. Dr. Marvel's suggestion is a very good one, and especially taken in connection with this fixation or implantation operation, when it may very well be done. The infolding of the cecum and lessening of its capacity may be done as a part of the conservative measure, but very often the wall of the cecum is so thin that the infolding and stitching might better not be undertaken.

Fig. 11.—Showing result in narrow-waisted woman, five years after parietal implantation; patient had been twenty years an invalid; since operation, she has acquired new profession and gained 60 pounds in weight.

CONTRIBUTIONS TO THE PHYSIOLOGY OF THE STOMACH

XXXV. THE NEWER INTERPRETATION OF THE GASTRIC PAIN IN CHRONIC ULCER *

HARRY GINSBURG, S.B.,
ISIDOR TUMPOWSKY, M.D.
AND
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CHICAGO

The precise nature of the characteristic pain of peptic ulcer is a matter of some dispute. It is generally assumed to be dependent on and to bear a direct relation to gastric acidity. This view has seemed especially plausible in view of the alleviation of the pain by alkalies. Many textbooks and teachers state that the pain is due to direct irritation of the sensory nerve endings at the base of the ulcer by the acid or by mechanical means by invoking peristalsis. Still others believe the distress is caused by the acid bolus impinging against the pylorus.

HAS THE STOMACH PAIN NERVES?

Before discussing the irritating action of acidity or motility, we must consider the existing confusion regarding visceral pain in general and gastric pain in particular. The situation is well discussed in Hertz's work.[1] From observations in a case of gastric fistula, Carlson[2] concludes that the sensation of pain cannot

* Dr. Ginsburg died March 9, 1916, during the course of the research for which he was most responsible.
* Read before the Section on Practice of Medicine at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Hertz: Sensibility of the Alimentary Tract, London, 1911, p. 47.
2. Carlson, A. J.: Am. Jour. Physiol., xxxvi, 154.

be produced from the normal mucosa by any stimulation confined to the mucosa itself. Lennander[4] concluded from his researches that only the parietal peritoneum is sensitive to pain and that visceral pain is due to stimulation of the parietal peritoneum by pressure, inflammation or traction on the mesentery. The conclusiveness of these experiments was overthrown by Kast and Meltzer,[6] who pointed out the fallacy of employing cocain infiltration. They demonstrated that local infiltration with cocain abolishes all sensation even after electrical stimulation, that the same amount of cocain injected into the leg would produce the same results, and that, therefore, systemic absorption of the drug is sufficient to abolish visceral sensations. Furthermore, they proved that there is actual pain sensation and that the sensitivity of the inflamed organ is still greater. These results were confirmed by Ritter.[5] The slight degree of sensitiveness of the viscera as compared with the skin is due to the smaller number of afferent nerves, as shown by Langley.[6] We may assume that the stomach has pain nerves. The question arises, Does the acid irritating the ulcer cause pain?

THE RELATION OF ACIDITY TO PAIN

In normal stomachs, injection of weak acids causes no pain. This has been shown repeatedly. Lowenthal[7] gave 250 c.c. of hydrochloric acid by tube and left it

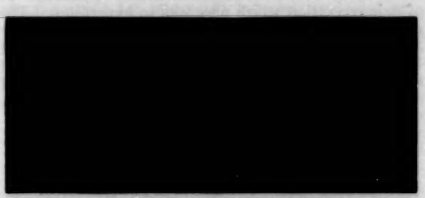

Fig. 1.—Case of gastric ulcer, showing that degree of pain varies with strength of contractions.

in one minute. With 0.3 per cent. no sensation was produced, while with 0.5 per cent. an occasional subject would experience a warm sensation. Hertz, Cook and Schlesinger[8] found that 0.5 per cent. hydrochloric acid causes no sensation in normal individuals. Schmidt,[9] using from 0.5 to 2 per cent. acid through gastrostomy openings of the empty stomach in three cases failed to produce symptoms. Boring,[10] with the enormous strength of acid of 5 per cent., experienced a sensation very much "like the ache of hunger."

In cases of ulcer, the most varied results have been reported. Heinecke and Van Selms[11] produced pain in four cases of ulcer by administering from 0.1 to 0.4 per cent. acid by tube. Bonminger[12] states that 100 c.c. of 0.36 per cent. hydrochloric acid always produces a violent pain in ulcer which is temporarily relieved by milk. On the other hand, Hertz[13] reports that in six cases of ulcer whose diagnoses were confirmed by operation, 4 ounces of 0.5 per cent. hydrochloric acid produced no sensation even when pepsin was added. Lowenthal's results agreed with those of Hertz. These results are especially valuable since it is doubtful whether the free acidity of the gastric contents ever exceeds this concentration. It is well known that hyperacidity symptoms may be present with normal acid values[14] and even in cases of achylia.[15] Boas

Fig. 2.—Case of gastric ulcer, showing period of tetany.

and others report cases in which persons obtain relief from soda who have no increased acid values.[16] Bolton,[17] also, states that pain has little or no relation to acidity inasmuch as pain is relieved by food whether the gastric contents are acid or not. Hyperacidity may remain when pain is relieved by treatment.[18] Some of these diametrically opposed results may perhaps be explained by the suggestion that they depend on the emptying time and the condition of the pylorus, and that the acid is neutralized by the bile and intestinal juices. We may also assume that the stomach in some of these cases presents a hyperesthesia for acid. However, it appears sufficiently clear from such a great diversity and absolute disagreement of findings that acidity alone cannot be the cause of pain.

TENSION THE ADEQUATE STIMULUS

More recent advances in stomach physiology tend to the conclusion that the adequate stimulus for pain in hollow viscera like the stomach is tension. Hertz pointed out that observers of gastric sensibility overlooked this factor. He believes that tension is the only cause of true visceral pain, and demonstrated that

Fig. 3.—Immediate effect of rapidly injecting 300 c.c. of tap water.

inflation of the stomach leads to a sensation of fulness when the intragastric pressure is from 12 to 15 mm. of mercury.[19] Actual pain results if distention is produced rapidly. The tension factor in stomach con-

3. Lennander, K. G.: Abdominal Pain, THE JOURNAL A. M. A., Sept. 7, 1907, p. 836.
4. Kast and Meltzer: Med. Rec., New York, 1906, lxx, 1017.
5. Ritter: Central. f. Chir., 1906, xxxv, 609.
6. Langley: Brain, 1903, xxvi, 23.
7. Lowenthal: Berl. klin. Wchnschr., 1892, xxix, 1188.
8. Hertz, Cook and Schlesinger: Jour. Physiol., 1908, xxxvii, 481.
9. Schmidt, J. E.: Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1909, xix, 278.
10. Boring: Sensations of the Alimentary Tract, Am. Jour. Psychol., xxvi, 48.
11. Heinecke and Van Selms: Arch. d. mal. de l'app. digestif, 1908, ii, 467.
12. Bonminger: Berl. klin. Wchnschr., xlv, Sec. 1, p. 396.
13. Hertz: Sensibility of the Alimentary Tract, p. 57.
14. Talma: Ztschr. f. klin. Med., 1884, vii, 407.
15. Einhorn: Arch. f. Verdauungskr., vii, 23. Kuttner, L.: Ztschr. f. klin. Med., liii, 1. Leo: Therap. d. Gegenw., December, 1904.
16. Boas, I.: Diagnostik und Therapie der Magenkrankheit, Ed. 6, Leipzig, 1911, p. 355.
17. Bolton: Ulcer of the Stomach, London, 1913, p. 149.
18. Hertz: Sensibility of the Alimentary Tract, p. 56.
19. Hertz: Sensibility of the Alimentary Tract, pp. 47, 54. Boring: Sensations of the Alimentary Tract, p. 45.

tractions can well be demonstrated. Fluoroscopic examination discloses in even the normal fasting stomach peristaltic waves beginning about the middle of the body, growing deeper as they reach the pylorus, contracting the cavity. It is easy to understand that the exaggerated peristalsis in the hypertonic organ causes an excessive intragastric pressure, and that the mus-

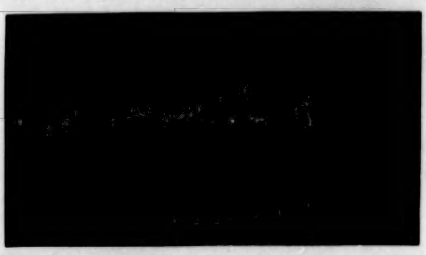

Fig. 4.—Injection of 40 c.c. of 2.5 per cent. hydrochloric acid giving fairly vigorous contractions lasting thirty minutes which were abruptly terminated nine minutes after the administration of an aqueous suspension of magnesium oxid and soda, 10 grains of each.

Fig. 5.—Inhalation of a 3 minim pearl of amyl nitrite absolutely abolished the painful stomach contractions, resulting in a state of flaccidity which persisted for four hours.

cular tension in the irritable condition causes pain. Moynihan[20] now believes that the pain is not so much due to the chemical changes in the chyme as the alterations of the muscular activities of the stomach and duodenum which may be stimulated by the chemical factors. Boas[21] also suggests that gastric pain and tenderness occur only at the time of emptying and are rapidly relieved by food taking, due, as he says, to abnormally strong pyloric contractions occurring stronger at the end of digestion. Bayliss and Starling[22] state that a wave occurs in one part of the alimentary tract while the part below should relax. Organic diseases or spasm from reflex irritation may prevent it so that the segment between the peristaltic contractions and the obstruction is subjected to a steadily increasing tension.

With tension as the immediate cause of pain an explanation of the relation of acidity is offered from a consideration of the work of Edelman[23] and Ducchesi.[24] They find that hydrochloric acid stimulates peristalsis. Such action would, of course, tend to increase intragastric tension. Carlson[25] does not find this to be true in normal man, and we have not found it so in the few cases in which we used it in ulcer. Cannon finds peristalsis and tonus even when the stomach contents are alkaline.[26] Hertz[13] offers another solution which might reconcile the relation of acidity and pain on the ultimate basis of tension. Excess acid passed into the duodenum prevents relaxation of the pylorus, permitting an increase in intragastric tension. The effect of acidity in the duodenum, of course, will depend on the alkalinity of the duodenal juices. Hertz also suggests that there are more nerve endings in the deeper structures of the stomach wall when exposed by ulcer and that these are stimulated by acid, alcohol and coarse foods, causing increased peristalsis and inhibition of pyloric relaxation. This view has been confirmed by paralysis of the nerve endings with orthoform. His Roentgen-ray examinations show that duodenal ulcer is accompanied by increased gastric tonus. Hyperacidity may then cause pain indirectly in many ways, causing hyperperistalsis and prevention of pyloric relaxation with usually intensified gastric tonus. In this way it effects a true pyloric syndrome which may be aggravated if there is also a hyperesthesia toward acid. It has been emphasized that chronic appendicitis and gallbladder disease are often associated with hyperperistalsis and hyperacidity, which may explain the epigastric pain so frequently found in these conditions. Cannon and Murphy[27] demonstrated that injury of the intestines causes inhibition of pyloric relaxation which may lead to hypertonus. The pylorus may be felt as a tumor in operating for the lesion. All these considerations tend to prove that the pain in gastric ulcer is not primarily a matter of mere acidity but a condition due to motor activity of the stomach manifested by hypertonus, hyperperistalsis

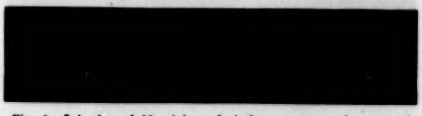

Fig. 6.—Injection of 15 minims of pituitary extract subcutaneously; contractions began in ten minutes, lasted thirty-five minutes, and were followed by a long period of inactivity.

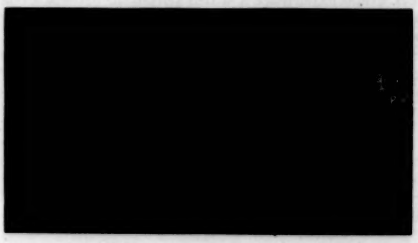

Fig. 7.—Case of gallstones, showing the onset of contractions, which were accompanied by pain.

and pylorospasm, often with a condition of hyperesthesia.

HUNGER AND TENSION

The mechanism of hunger has been quite definitely established through the work of Carlson[28] and Cannon

20. Moynihan: Duodenal Ulcer, 1912, Ed. 2, Philadelphia and London.
21. Boas, I.: Diagnostik und Therapie der Magenkrankheit, Ed. 6, Leipzig, 1911, p. 616.
22. Bayliss and Starling: Recent Advances in the Physiology of Digestion, London, 1906.
23. Edelman: Dissert. (Russian); abstr., Jahresb. ü. d. Fortschr. d. Physiol., xv, 119.
24. Ducchesi: Arch. p. le Sc. Med., 1897, xxi, 154.
25. Carlson: Am. Jour. Physiol., xxxii, 249.
26. Cannon: Am. Jour. Physiol., 1907, xx, 299.
27. Cannon and Murphy: Ann. Surg., 1906, xliii, 512.
28. Carlson: Am. Jour. Physiol., xxxi, 151, 175, 212, 318; xxxii, 245, 369.

and Washburn.[29] They studied the activity of the empty stomach by means of a delicate balloon attached to a manometer which registered the changes in intragastric pressure due to contractions of the stomach. Boldireff,[30] using dogs, was the first to apply this method. He found that the whole alimentary tract had a periodic activity when not digesting. He found periods lasting from twenty to thirty minutes characterized by rhythmic contractions ten to twenty in number followed by a rest of one half to two hours and repeated. He believed that hunger caused the contractions. Cannon and Washburn extended their observations to man. They found that the strong contractions of the stomach were accompanied by the sensation of the hunger pang. While the tracing was taken the observed, who could not see the results, was asked to press a key when the sensation was noted. Invariably, the feeling occurred after the powerful contractions had reached their height. The feeling disappeared when the contractions ceased, and the contractions could not be controlled by the observed. Carlson elaborated extensively on these results, using a gastric fistula man in part of the work. He found a fairly close correspondence between the degree of hunger and the strength of the contractions, and that the recognition of this condition as hunger depends also on the rapidity of the contraction phase.[31] It was reported as early as 1898 that when the stomach empties itself the midregion becomes narrowed to a tubular portion as seen by the Roentgen ray.[32] Waves then originate as tonic rings separating the tube from the rounded cardiac sac. These rings form depressions seen in the Roentgen-ray plate. A more recent Roentgen-ray examination of a normal fasting stomach with simultaneous record of the hunger contractions by means of a bismuth coated balloon was made by Rogers and Hardt.[33] Fluoroscopic examination, which the authors had the privilege of witnessing, disclosed peristaltic waves beginning about the middle of the body, growing deeper as they reached the pylorus. There were frequently as many as three constricting rings passing over the stomach at one time. As these occurred the tracing registered extremely high hunger contractions, and the subject invariably pressed the key recording the hunger pang accompanying the contractions. As Carlson states, the afferent nerves of the mucosa are not primarily concerned in the genesis of hunger. Hunger seems to be produced by contractions only, that is, by stimulation of the nerves in the muscularis.[34]

THE PRESENT PROBLEM

It has probably already occurred that there is a significant similarity between the condition of the stomach in hunger and in ulcer. The difference appears to be largely a matter of degree of sensitivity caused perhaps by hyperactivity and hyperesthesia. The situation admirably illustrates that the laboratory man is justified in censuring the clinician who only considers those things pertinent which manifest clinical symptoms. For as the laboratory worker points out, the same condition acting in two cases may produce clinical symptoms in one and none in the other. That the hunger contractions of the normal stomach have a direct bearing on the pain in ulcer might have been anticipated from the statements of Hertz[35] that "the same mechanism producing pain gives fulness: this latter sensation occurs for months before pain"; and Moynihan,[36] that "the characteristic hunger pain of duodenal ulcer is preceded and accompanied by sensations of fulness and hunger." From the close analogy between the state of hunger and the more plausible view that ulcer pain is due to tension, it was thought that a study of the conditions by the balloon method would yield a concrete demonstration of the tension in the one case and prove its similarity to hunger contractions in the other.

METHOD AND RESULTS

Ten cases under the care of one of us (W. W. H.) at the Cook County and Michael Reese hospitals diagnosed clinically as peptic ulcer were examined. Two tubes, each about 5 mm. in diameter, were prepared. To one was attached the balloon. The other was a modified Rehfuss tube made by enclosing a piece of lead at the very end and perforating the tube for about 3 cm. above. It was expected that the weight would carry the tube to the dependent parts so that the contents might be aspirated from time to time. The two tubes were swallowed at once. The balloon tubing was connected with a T tube through which the balloon was distended and a chloroform manometer. A cork float on the column of chloroform supported a rod to which was attached an indicator to write on a slowly moving drum. The aspiration tube was connected with a wash bottle holding about 300 c.c. By suction through the shorter arm of the bottle the contents of the stomach could be quickly aspirated. By the same arrangement various solutions could be rapidly and easily forced into the stomach without the knowledge of the observed. The subject was at rest in bed while the tracings and manipulations were made, and usually fell asleep, aroused occasionally by distress. Observations lasted as a rule from two to four hours, and in one case a continuous twenty-four hour tracing was obtained.

REPORT OF CASE

P. S., man, aged 27, was admitted to the Michael Reese Hospital, July 19, 1915, complaining of pain in the epigastrium coming on about one hour after eating. The distress had been growing worse for the preceding two years. It was not present in any other part of the abdomen, and was not referred posteriorly. It was aggravated by food of any description and by drinking, and was more severe about an hour after eating. It was relieved by pressure over the abdomen and by vomiting. Nausea and vomiting began with the onset of the condition, and occurred about one-half to one hour after meals. Vomiting sometimes occurred after water. There was a sour taste and odor and a burning sensation on vomiting. He had noticed a small amount of blood in the vomitus only once, seven months before entering the hospital. Eructations occurred more or less constantly all day and caused a sour taste in the mouth and burning in the throat. He had never noticed blood in the stools. He had lost forty pounds in weight since the beginning of his illness.

Examination showed marked visible peristalsis extending from the left upper to the right lower abdomen. This region was distended and somewhat rigid. After an Ewald meal, 750 c.c. were recovered. Between 1,000 and 2,000 c.c. were commonly recovered on aspiration of the stomach at different times. The free acidity averaged about 28 and the total about 60. Fluoroscopic examination showed a large stomach displaced downward. No cap was seen. A thin line of bis-

29. Cannon and Washburn: Am. Jour. Physiol., 1912, xxix, 441.
30. Boldireff: Arch. biol. de St. Petersburg, 1905, xi, 1.
31. Carlson: Am. Jour. Physiol., xxxi, 180.
32. Kaestle, Rieder and Rosenthal: Arch. Roentgen Ray, 1910, xv, 21, 24.
33. Rogers and Hardt: Am. Jour. Physiol., xxxviii, 274.
34. Carlson: Am. Jour. Physiol. xxxi, 188.
35. Hertz: Sensibility of the Alimentary Tract, p. 59.
36. Moynihan: Duodenal Ulcer, p. 101.

muth was seen to pass. Otherwise the pyloric end was very broad and sharply cut off from the rest of the organ. After thirty hours considerable bismuth still remained in the stomach.

A diagnosis was made of cicatricial pyloric narrowing following gastric ulcer with gastroptosis. Tracings taken from this case showed extremely marked contractions accompanied by visible peristalsis usually (Fig. 1). Periods of tetany were quite frequent (Fig. 2).

From repeated observations on ordinary cases, the regular picture of the normal hunger contractions was obtained, but it was striking that the contractions were not more severe and of approximately the same excursion as the normal hunger picture. In hunger the sensation is interpreted as a pang; in ulcer, as a pain. With the onset of the strong contractions shown in our tracings, the patients complained of symptoms varying in interpretation from a feeling of fulness and tightness to severe epigastric pain. In several cases the patient was aroused from sleep with the complaint of pain. The sensation nearly always came on when the contractions had reached their height. In one case at the height of the contraction the patient vomited. Between the periods of activity the patient registered no complaint. These contractions could not be seen and were not understood by the patients. While the record was taken, various substances were injected into the stomach by the arrangement described. In one case 300 c.c. of milk caused transitory contractions. The same was found true by an equal quantity of tap water (Fig. 3). This may have been caused by the rapid introduction of the liquids causing distention.[37] Hydrochloric acid in strengths of 0.5 and 1 per cent. caused little or no effect on the contractions and no effect on the sensations. In one case 40 c.c. of 2.5 per cent. acid caused a period of rather vigorous contractions lasting one-half hour and terminating abruptly nine minutes after administering a suspension containing 10 grains each of soda and magnesium oxid (Fig. 4). In another single case 70 c.c. of 5 per cent. acid caused intense burning, and the patient vomited balloon and tubes. Administration of soda immediately relieved him, and he ate his luncheon five minutes later entirely comfortable. The subjective sensations caused by 2.5 per cent. acid could not be relied on since the subject was very ignorant and untractable. One per cent. solutions of soda in 300 c.c. quantities caused no noticeable effect. A 3 minim pearl of amyl nitrite was given by inhalation in one case. The patient became extremely faint, and the strong contractions which had been registering absolutely ceased, to be followed by a period of absolute flaccidity which lasted four hours (Fig. 5). While a tracing was taken of a quiescent stomach, 15 minims of pituitary extract were injected subcutaneously into the arm. In ten minutes well marked hunger contractions set in, even displaying short periods of tetany. This lasted for thirty-five minutes, when the stomach again became flaccid (Fig. 6). In a case of gallbladder disease in which fluoroscopic examination of the stomach showed no abnormality, strong contractions occurred with pain, closely resembling the results in ulcer (Fig. 7).

CONCLUSIONS

1. The finding of strong contractions of the stomach accompanying the pain of gastric ulcer seems to confirm the idea that pain is due to tension.

2. The marked hunger contractions cause pain in a hyperirritable condition of the stomach by increasing intragastric pressure.

3. The conception that gastric pain is due to tension will explain many obscure conditions simulating gastric ulcer, viz., achylia gastrica, chronic appendicitis and gallbladder disease.

4. Hyperacidity, alone, may be a factor by reflexly causing hypertonus, hyperperistalsis and pylorospasm, allowing greater tension to be produced.

5. The subjective relief of pain by alkalies does not necessarily prove that acid is the cause of pain, but may be interpreted on the basis that alkalies prevent the development of pain producing hypertonus by neutralizing the causative factor of such hypertonus, i. e., acid.

6. Pituitary extract stimulates contractions, as is to be expected from its property of stimulating smooth muscle.

7. Amyl nitrite in the case reported abolished the contractions, probably by stimulating the inhibitory nerves or by lessening the reflex excitability.

8. From the results obtained, hydrochloric acid in the strength that it may occur in the stomach (about 0.5 per cent.) causes no appreciable effect. The authors do not feel justified in drawing final conclusions regarding the effect of acidity until more cases are studied whose emptying time and condition of the pylorus is more thoroughly observed.

37. Carlson: Am. Jour. Physiol., xxxii, 248.

CARBOHYDRATE RESTRICTION IN THE MEDICAL TREATMENT OF GASTRIC HYPERACIDITY AND ULCER *

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Gastric hyperacidity forms a very considerable part of the symptoms of dyspepsia which the physician is called on to treat. It may exist (1) as part of the syndrome associated with prolapsed viscera and the attendant neurasthenic state coupled with a faulty dietary; or (2) as a result of reflex disturbance from some neighboring abdominal organ, such as the gallbladder or appendix, or (3) as a result of faulty habits of mastication and the choice of appropriate food.

Although easy of diagnosis, the cause of the disturbance is not always so easy to fathom. The chief factor concerns the remote results of chronic hyperacidity. It is safe to say, in the present state of our information, that ulceration in stomach or duodenum rarely occurs without long standing hyperacidity. Moreover, the medical treatment and cure applicable in a large percentage of ulcer cases depends to a great degree on neutralization of the acid secretions by the administration of appropriate food and sufficient alkali. This has been amply demonstrated by Sippy.[1]

Of the many explanations as to the cause of chronic ulcer offered since the day of Cruveilhier and Rokitansky, but few have stood the test of time. The corrosive action of hyperacid chyme, coupled with factors which render the gastric mucosa more susceptible to digestion, such as metastatic emboli, local thrombosis,

* Read before the Section on Practice of Medicine at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Sippy, B. W.: Gastric and Duodenal Ulcer; Medical Cure by an Effective Removal of Gastric Juice Corrosion, THE JOURNAL A. M. A., May 13, 1915, p. 1625.

trauma, infection or a combination of these conditions, serves as the usual explanation.

In the production of ulcer there may be mentioned the experimental ligature of arteries supplying certain portions of the gastric wall; the addition of bacterial infection to acutely traumatized areas of gastric mucosa; the local injection of substances acting as chemical irritants; the production of general anemia with the addition of local irritants, and last, by artificial occlusion of the pylorus with resulting motor insufficiency after acute ulceration has been produced. Although acute ulceration can be readily produced by these means, the majority heal readily and do not become chronic. In other words, the tendency to heal is rarely absent in experimentally produced lesions.

In patients manifesting ulcer symptoms the same tendency is present, providing the cause is sought for and relieved and the ulcer area protected from the action of acid chyme by properly selected food frequently administered and by doses of the alkalies adequate to secure neutralization of the gastric juice. As Pawlow[2] has stated: "In clinical, pharmacologic and physiologic textbooks, it is stated that the alkalin salts of sodium promote a flow of gastric juice. We may look in vain, however, for any experimental foundation to support this doctrine." In fact, alkalies have been shown to exert a distinct inhibitory influence on the gastric glands quite distinct from their neutralizing effects on acids already present. In most patients a combination of causative factors can usually be found. The first aim, of course, should be to correct the cause.

Of the first group mentioned above, prolapse of the viscera, including the stomach, is, in my experience, frequently associated with the hypersecretion of acid chyme. If with this factor there is also associated a faulty dietary, especially of the carbohydrate elements, favoring bacterial decomposition within the organ, and if, because of the chronicity of the prolapsus, spasm and motor insufficiency has occurred, the conditions are favorable to the train of symptoms which we have come to recognize as chronic ulcer. Our first aim should be, therefore, to support the viscera, including the stomach, by proper appliances or belts in as nearly a normal position as is possible under the circumstances, and second, to restrict or limit the intake of carbohydrate foods in order to lessen bacterial fermentation and the elaboration of organic acids. As is well known, hypomotility favors bacterial fermentation within the stomach.

Enough experience has accumulated to show the importance of attention to septic foci about the teeth and tonsils. The organisms daily swallowed by patients with septic mouths, septic tonsillar crypts and nasal sinuses, may contribute materially to bacterial fermentation of the carbohydrate elements usually present in excess in a mixed meal, if not, as believed by many investigators, to actual ulceration. In this connection it has always been a source of wonder to me why more patients with septic mouths from extensive pyorrhea did not manifest stomach symptoms. Alveolar abscesses may serve as foci of infection, although it is difficult to understand the method of bacterial metastasis and the supposed selective affinity for certain tissues.

Of the second group in which reflex disturbance from some neighboring organ may be a factor of importance, my records of the past ten years have shown that in approximately 50 per cent. of the patients manifesting symptoms of hyperacidity and ulcer various causes have appeared to be operative. In order of frequency these have been coincidental gallbladder disease, stones or adhesions; chronic obliteration, twist or adhesions involving the appendix; uterine malposition or adhesions; tubal disease; renal or ureteral stone and abdominal hernias. On the other hand, many patients with such conditions do not complain of disturbed digestion, while many others with no secretory disturbance complain of gastric distress. Syphilitic ulcer has been excluded from these figures, for when it has existed the cure has resulted from the employment of specific measures in addition to those applicable to the treatment of simple septic ulcer.

In the third group there occurs apparently an increasingly large number of patients in which the disturbing causative factor appears to be a tendency to an abnormal consumption of carbohydrates, coupled with poor salivation as a result of hurried and faulty mastication due to poor teeth. The monosaccharids, such as dextrose, levulose and galactose, are fermented by yeast into alcohol and carbonic acid. Lactic acid is also formed by the action of the *Bacterium lactis*. The disaccharids, such as saccharose, maltose and lactose, are not fermented by yeast, but may be broken up into lactic acid by the *B. lactis* or butyric acid by the *B. butyricum* of Pasteur, or the micrococci of butyric fermentation discovered by Fitz. Of the polysaccharids, starch is likewise subject to bacterial fermentation with the formation of organic acids.

For years the idea has held ground that an excessive protein diet was a factor of importance in the causation of hyperchlorhydria. There can be no doubt that the symptoms of such a condition and that of ulcer are sometimes found in patients who have been excessive meat eaters. For this reason, and certain experimental data, the belief has been prevalent that meat extractives caused the hypersecretion of hydrochloric acid through acting as chemical excitants, and as such should be avoided in the treatment of gastric hyperacidity. This is a matter of relative importance only. Regardless of what experiment may show in animals, the deductions when applied to patients must justify themselves by results. It may be mentioned that foods rich in albumin bind larger quantities of hydrochloric acid than carbohydrate foods. This holds true in experiment on normal animals and is probably true under pathologic conditions in man.

The tendency of the past few years has been toward the restriction of meats and albuminous foods in the treatment of hyperchlorhydria and ulcer and the substitution therefor of carbohydrate foods. This belief has gained ground largely from the work of Pawlow, who published his experiments in 1902. He showed that in dogs the quantity of gastric juice secreted from hour to hour was greater after meat than after bread and milk. He likewise showed that the acidity of juice secreted after meat was greater (0.56 per cent.) than after bread (0.46 per cent.). The juice secreted after bread contained, however, more ferment than that secreted after meat. The point should be noted that the hourly intensity of gland work was much less with bread, which would mean that the time required for the digestion of its protein constituents was longer and that the duration of gastric secretion was correspondingly protracted. It seems, therefore, in the type of carbohydrate digestion manifested by bread and cereals, that there exists a slightly lower hydrochloric acidity, but a more protracted secretion. Since there is no provision in the stomach for carbohydrate diges-

2. Pawlow: The Work of the Digestive Glands, London, 1902.

tion, it has seemed plausible, in this day of excessive sugar consumption, that this common dietetic fault might be responsible for the altered gastric secretion found in a large majority of patients suffering with hyperacidity, pyloric spasm and ulcer.

I am indebted to L. M. Estabrook, Chief of Bureau of Crop Estimates, U. S. Department of Agriculture, for Table 1, published in an earlier article,[3] which shows the great increase in sugar consumption for the period 1871 to 1911 in the United States, United Kingdom, France and Germany. The per capita consumption[4] has been computed by adding the production of a given country to its imports and subtracting its exports.

The point is made that the moderate consumption of carbohydrates under normal digestive conditions is a different matter than excessive consumption when hyperchlorhydria is present. In patients with pyloric spasm or ulcer the excess is required to remain in the stomach during the process of protein digestion of the other constituents of a mixed meal, with the result that bacterial fermentation follows and the symptoms of so-called amylaceous dyspepsia become evident. As is well known, patients with hyperacidity complain of their inability to digest starchy foods. Their distress appears to be due primarily, not to the hydrochloric acid content of the stomach, but to the bacterial elaboration of organic acids from carbohydrate fermentation. Later in the process of gastric digestion, usually after one hour, hypersecretion of hydrochloric acid occurs as a result, I have believed, of the stimulating effect of such organic acids as butyric, lactic, acetic and proprionic. If either the Rehfuss, Einhorn or simple duodenal small tube with the catheter end is employed after a hastily swallowed bulky carbohydrate meal and the secretion removed at five to ten minute intervals the curve of hydrochloric acid does not reach its maximum as a rule until after the expiration of one hour, while the organic acids become evident within a much shorter interval. Pawlow[5] has shown that butyric acid strongly excites gastric secretion. Although my experience with the test meal advocated by Skaller[5] is limited, it has much to commend it. It consists of 5 gm. of Liebig's beef extract in 200 c.c. of water. It is more palatable and gives a truer picture of gastric secretion than the Ewald meal.

TABLE 1.—ESTIMATED AVERAGE PER CAPITA CONSUMPTION OF SUGAR IN FOUR IMPORTANT COUNTRIES

Year	United States,* Pounds	United Kingdom† (Net Imports), Pounds	France,‡ Pounds	Germany,§ Pounds
1871	36	44	17	128
1881	43	64	22	35
1891	61	78	30	21
1901	71	91	24	27
1911	77	92	39	42
1912	82.4			

* For years ending June 30.
† For years ending December 31.
‡ For years ending August 31.
§ For 1872.

Clinically, patients with hyperacidity, delayed motility and ulcer do better when their intake of carbohydrate foods is lessened. Deeks[6] called attention to this in 1912. Although I cannot subscribe to all the restrictions imposed by him, I am convinced that excess of carbohydrates is a common dietetic error with such patients. I am also convinced that restriction generally to those articles of food which do not contain more than from 10 to 15 per cent. carbohydrates, with small additions of food which contain more than 20 per cent., such as bread and potato, together with sufficient alkali to limit the secretion of hydrochloric acid, has given better results than heretofore obtained. The following general diet list in hyperacidity I have found useful, articles from which may be omitted if found necessary in any given case.

Proteins and Fats.—Soft boiled or poached eggs, omelette, broiled or baked fish, bacon, chicken, oyster or clam broth, custard (use slight amount of sugar), butter, milk and cream, cream cheese, olive oil, tea.

Five Per Cent. Carbohydrates (Fodder-Vegetables and Fruits).—Asparagus, cauliflower, water cress, spinach, eggplant, lettuce, beet or dandelion greens, string beans, olives, grape fruit pulp.

Ten Per Cent. Carbohydrates (Fodder-Vegetables, Fruits and Nuts).—Onions (boiled), squash, turnips, carrots, beets, lemon juice (one teaspoonful with one ounce olive oil twice daily as salad dressing), orange juice and pulp, peaches, watermelon, cantaloupe or musk melon, hickory nuts, filberts.

Fifteen Per Cent. Carbohydrates (Fodder-Vegetables, Fruits and Nuts).—Green peas, parsnips, canned Lima beans, baked apple (pulp), pears, pecans, almonds, English walnuts.

The patient may take daily in addition, one potato, three slices of toast, one portion breakfast cereal or rice, purée of pea, corn ("Kornlet") or spinach.

Avoid excess sugar in above foods, candy, syrups, condiment sauces, pickles, green corn, tomato, cornstarch, macaroni, spaghetti, bread, crackers, cocoa, chocolate, coffee and vinegar.

In addition the patient is requested to take one glass of milk between meals and at bedtime. After each meal and after each glass of milk between meals, a powder consisting of heavy magnesium oxid, sodium bicarbonate and bismuth subcarbonate is to be taken in from one half to one teaspoonful doses in one third glass of water. If evidences of hypersecretion exist the powder is given every two hours, regardless of the feedings, between 7 a. m. and 10 p. m., with an additional glass of milk and a dose of the powder should the patient awake during the night. By this plan, the details of which were more generally stated in the previously published article,[3] relief is soon obtained, the evidences of pyloric spasm and food retention are decreased and the pyrosis and hunger pain soon disappear due to the lessened gastric secretion and hunger contractions. It is, of course, difficult to rid the stomach of the bacteria of organic acid fermentation. If the organic acids persist, as evidenced by flatulence and pyrosis, gastric lavage may be used once daily one hour before the principal meal. A liter of a solution of salicylate acid 1 to 1,000 is well adapted for this purpose.

In the treatment of ulcer it is necessary to secure absolute rest, usually in the hospital. Patients treated at home are usually unable to secure the rest and nursing cooperation necessary to the best results. In other words, they, as a rule, cannot be made while at home to attend strictly enough to the business of getting well. Although the details of the ulcer diet here given

3. Stone, W. J.: The Carbohydrate Factor in the Causation and Treatment of Hyperacidity and Ulcer, THE JOURNAL A. M. A., Jan. 29, 1916, p. 324.

4. Consumption includes all uses in households, in factories and elsewhere. Figures for the United States and the United Kingdom refer partly to raw and partly to refined sugar; for France, figures for 1871, 1881, and 1891 refer to raw, and for 1901 and 1911 to refined sugar; for Germany, figures for 1871 and 1881 refer to raw, and other figures to refined sugar. This table was compiled from the Statistical Abstract of the United States, Statistical Abstract of the United Kingdom, Annuaire Statique (France), and Statistiche Jahrbuch für das deutsche Reich (Germany). Those interested may also consult Bull. U. S. Dept. Agriculture, No. 66, March 10, 1914.

5. Skaller: Berl. klin. Wchnschr., 1915, lii, 105.

6. Deeks, W. E.: New York Med. Jour., Nov. 30, 1912.

differ somewhat from the plans advocated by Lenhartz and by Sippy, the essentials are the same in so far as the attempt is made to control the supersecretion, to limit the secretion of hydrochloric acid and by frequent feedings and sufficiently large doses of the alkalies to prevent continuous local irritation of the ulcer area. This plan has been used with slight modifications since 1913 with good results in prepyloric, pyloric and duodenal ulcers.

Remarks on Treatment.—Neutral sodium citrate, 3 grains to each ounce of milk, may be given to prevent curd formation in the stomach.

Give ½ to 1 teaspoonful of alkaline powder (usually magnesium oxid 5, bismuth subcarbonate 5, sodium bicarbonate 20) after each feeding at 6 a. m. and 10 p. m.

The albumin water contains white of one egg flavored with orange or lemon juice, with no sugar.

If a taste of the milk remains in the mouth, use a weak borax mouth wash after each milk feeding.

If patient has been starved, give proctoclysis daily, by drop method, of 1 quart tap water containing 1 ounce dextrose.

TABLE 2.—ULCER FEEDING SCHEDULE

Day	Diet and Frequency	Time	
		A. M.	P. M.
1st	Milk, 2 ounces, every 2 hours	6	8
	Albumin water, 2 ounces, every 2 hours	7	9
2d	Milk, 2 ounces, cream, 1 ounce, every 2 hrs.	6	8
	Albumin water, 3 ounces, every 2 hours	7	9
3d	Milk and cream as above, every 2 hours	6	8
	Albumin water, as above, every 2 hours	7	9
	One soft boiled egg, with feeding at	7	7
4th	Milk and cream as above	6	8
	Albumin water as above	7	9
	One egg as above, with feeding at	7	7
	Soft, well cooked cereal, 3 ounces, with feeding at	8	2
5th	Milk and cream as above	6	8
	Albumin water as above	7	9
	One egg as above, with feeding at	7	1 and 7
	Cereal as above with feeding at	8	2
	Purée, 3 ounces, with feeding at	12 M.	6
6th	Milk and cream as above	6	8
	Albumin water as above	7	9
	One egg with 2 slices bacon, with feeding at	7	1 and 7
	Cereal as above, with feeding at	8	2 and 8
	Purée as above, with feeding at	12 M.	6
7th	Repeat above and 3 ounces broth, with feeding at	10	4
8th	Same as seventh and broth, with feeding at	10	4 and 10
9th to 14th	Same as eighth and ½ slice toast with three feedings. Custard, 3 ounces, may be substituted for one or two milk or albumin water feedings if desired		

Butter may be added to cereal or egg if desired.

Avoid much sugar in preparation of custard.

Purée refers to pea, spinach or corn ("Kornlet").

Cereal refers to Cream of Wheat, Ralston's, boiled rice or Farina (measured after cooking).

Broth refers to chicken, oyster or clam.

Bacon should be fried crisp.

If retention of food exists lavage stomach one hour after last feeding at night.

Take weight of patient every alternate day.

It is obvious that in extensive ulcer areas involving the lesser or greater curvature with hour-glass constriction, a medical cure may not be secured; but since most of these are the result of a spasmodic indrawing of the curvature opposite the ulcer, relief is many times as adequately secured by the medical cure as by surgical intervention, since the spasm diminishes in direct ratio to the protection given the ulcer. This may not be true in chronic ulcers with undermined edges or of course in those with definite scar tissue formation. It has been surprising, nevertheless, to note the relief obtained in those patients manifesting symptoms of long-standing pyloric obstruction in whom scar tissue contraction was suspected but which, from the results obtained, could have been nothing more than edematous infiltration of the pyloric ring incidental to spasm.

Gastro-enterostomy, so frequently performed in such patients, does not give any more adequate results. In fact, unless performed for the relief of perigastric adhesions or perigastric abscess, the result of an earlier walled-off perforation, or for severe hemorrhage, which is rarely necessary, or following partial resection or excision of an area suspected of being carcinomatous, the operation will probably be less and less indicated. During the past five years it has been necessary to have gastro-enterostomy performed in only two patients, in one of whom with extensive ulceration near the pyloric ring it was difficult to secure cooperation in the medical cure; in the other the operation was advised and performed on a young man in the ward for long-standing hematemesis, which seemingly could not be controlled. At the operation no ulcer was found nor could the bleeding point be located. The end-result in both instances was satisfactory.

In brief, while the short loop posterior gastro-enterostomy has given good results in securing relief from the symptoms present in ulcer, no adequate method of pyloric closure has yet been devised which prevents the food from passing through the pylorus after the ulcer has healed. The operation has merely given more adequate drainage and diverted the stomach contents from the ulcer area until healing has taken place. The tendency to heal is always in evidence and will occur in most instances if constant irritation of the ulcer by acid chyme is prevented. The opinion may be ventured that the operation would be far less popular if it was generally realized that by medical means the same results might be secured. This refers as well to the so-called obstructive types, in which, under the management here emphasized, the pyloric opening has increased as the spasm decreased. In the past it is safe to say that the operation of gastro-enterostomy has been frequently performed without adequate prior trial of dietetic and medical measures founded on principles now well established. From the viewpoint of the physiologic principles involved should operative means be indicated, excision of the ulcer and pyloroplasty has more to commend it and will probably in the future be the method of choice.

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ABSTRACT OF DISCUSSION

DR. SAMUEL JAMES MELTZER, New York: I have dealt with the question of sensation of the abdominal viscera at various times. I have taken an interest in two questions. One was concerning the sensation of pain in the abdominal viscera in general. Lennander and other surgeons have put up the claim that the visceral peritoneum possesses no nerve fibers for pain. It is a fact that when the abdominal cavity is opened under cocain anesthesia, the viscera can be manipulated without producing any pain to the conscious patient. We have explained this fact in two ways. In the first place, in all these cases cocain was used, and we discovered that cocain may have even a distant analgesic effect. In the second place we have tried to show experimentally that the mere opening of the abdominal cavity is capable of greatly reducing the sensibility of the viscera. The opening of the abdominal cavity also exerts a profound influence on the motility; it stops all peristaltic movements; it exerts further also an inhibitory effect on trophic functions. This is illustrated by the well-known fact that the mere incision of the abdominal cavity is capable of curing tuberculous peritonitis. I would

remind of the further fact that exposure of the brain or of the cord is capable of abolition of sensation of these organs. My second interest was concerned with the nature of pain in colic. My interpretation of it was based on the so-called "law of the intestines." When any place of the intestines is stimulated it produces a contraction above and a relaxation below. That is the normal effect of a stimulus. However, in an abnormal state, it may occur that a stimulation may cause simultaneously a strong peristaltic contraction above and a constriction below the stimulus. The progress of the peristalsis downward has the effect that the same mass, fluid and gas, would have to find place in a smaller volume; hence the colic. I applied the same explanation to gastric colic. It may occur when the strong contraction of the preantrum is progressing forward, while the pylorus remains strongly constricted.

DR. MILTON HOWARD FUSSELL, Philadelphia: There is no easier problem to be solved than the relief of symptoms of duodenal and gastric ulcer. Take a case of gastric or duodenal ulcer, whether acute or chronic, and place that patient on Lenhartz treatment, or the treatment that has been suggested here, or on any of the accepted medical forms of treatment, and in a very short time the patient will be relieved of the pain. He will soon gain in weight and apparently he will be cured. But simply to attack and relieve the symptoms and say then the patient is cured is a great error. I believe the medical treatment of acute peptic ulcer has its place and every case should be so treated. But I also believe that the chronic ulcers should not be so treated. Operations now are much more valuable in chronic ulcers than is medical treatment. The statistics published by the Mayos, Deaver, and others, show that hour-glass contractions, perforation, hemorrhage and carcinoma are much less common in those cases that are treated surgically, and the end results are much more frequently cures than are the results of medical treatment. I have therefore come to the conclusion that every individual who has a chronic gastric or duodenal ulcer is no longer a medical but a surgical case and should be treated by a skilled surgeon. When the operation is done I believe that patient is out of danger from carcinoma, particularly if it is a chronic gastric ulcer. This cannot be said of the medical treatment of chronic ulcers.

DR. ANTHONY BASSLER, New York: Since about one half of the cases of gastro-duodenal ulcers have a subnormal or absent acidity, then the pain is motor rather than sensory; thus I think the points raised are well taken. On this basis the relief of the subjective symptoms, by lowering peristalsis with alkalies, should prove of value. Also, when an excision of the ulcer, or a gastro-enterostomy is done, there is a distinct lessening of the motility of the stomach for a time. There is an interference accomplished by the operation which causes a lowered status of motility. I am not arguing in opposition of drainage, as a factor in operation, but in favor of relief of pain. Without wishing to criticize the carbohydrate diet in a personal way I believe that the benefits accomplished in hyperacidity or in ulcer are not so much due to any restriction of the carbohydrates as to the restriction of all food constituents. It makes little difference whether we restrict the proteins or the carbohydrates. The main thing is that the majority of hyperacidity patients eat themselves into hyperacidity, leaving out the neurologic and psychologic cases. The restriction of carbohydrate and the normal amount or lesser amount of protein makes little difference in the end. The main thing is that the diet should only be equal to the patient's individual necessities, and it is not necessary to weigh the food to accomplish this in every case.

DR. J. W. DRAPER, New York: The question of operation in these cases, from the surgical standpoint, is by no means decided. We have recently experimented on a large number of animals, trying to find the cause of this impairment. Dr. Barber has shown that if a segmental resection of the stomach is made, the function afterward remains practically perfect. Whereas, if a V-shaped piece is removed the function is impaired. There is another point of great interest, the differential diagnosis between duodenal and gastric ulcer. Carcinoma never follows ulcer of the duodenum but it does frequently follow ulcer of the stomach. It is not known why this is so. Hyperchlorhydria is an interesting subject. It has appeared to us from a study of the biologic side that this may be a protective factor by which the organism attempts to prevent aggressions of different kinds. It is unquestionably a symptom.

DR. ISIDOR TUMPOWSKY, Chicago: The "law of the intestines" supports our conception of gastric pain, i. e., when the part above contracts and the part below fails to relax pain results. When gastric peristalsis occurs and the pylorus fails to relax either from spasm or deficient neutralization of the excessive acid passed into the duodenum, pain results from increased intragastric tension. The pain is accompanied by contractions. Pain is not felt unless contractions are present. In the quiescent periods pain is not registered. This seems to point to the conclusion that tension is the cause of the gastric pain.

DR. WILLARD J. STONE, Toledo, Ohio: I believe it is up to the surgeon who advocates gastro-enterostomy without appropriate prior medical treatment to prove that there is no impairment of stomach function after this operation. The vast majority of gastric and duodenal ulcers are amenable to medical treatment by the methods outlined by Sippy and Lenhartz or by the plan here suggested. If, a reasonable length of time after the so-called medical cure has taken place with the patient free from symptoms, there is a recurrence, we may then consider the possible necessity of operative procedures. The point I wish to make is that many gastro-enterostomies are being performed today without efficient prior medical treatment.

SYPHILIS AS A PROBABLE FACTOR IN VAGUE STOMACH DISORDERS*

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Hospital and private case records show stomach troubles as the chief or presenting symptom in a very large percentage of all patients. In many others, while not the chief complaint, it figures prominently in the chronicle of their troubles.

The former presumption of guilt on the part of the complaining stomach led to many fine-spun diagnoses to fit elaborate classifications. The more recent view of innocence on the part of the stomach until guilt is proved makes for greater thoroughness in the search for causes of symptoms both intragastric and extragastric.

It is not difficult to understand why the stomach protests so frequently and so emphatically against disturbances originating outside itself when we recall the embryologic relation of the whole alimentary apparatus with its common innervation by branches of the vagus and great sympathetic abdominal plexus.

This provides a mechanism so marvelously delicate as to respond to the slightest stimulus either psychic or somatic, for example, the sight or odor of appetizing food producing gastric secretions or the reflex irritation of a chronic appendix causing regurgitation of food.

The problem of determining and separating the two classes, those in which the lesion is in the stomach (organic) and those in which this organ suffers reflexly or vicariously (functional), has been greatly simplified by improvement in diagnostic methods in general, enabling the more certain recognition of all extragastric diseases. But of far greater value have been the roentgenologic studies of the gastro-intestinal tract and of surgical pathology after exploratory laparotomy.

* Read before the Section on Practice of Medicine at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

Notwithstanding these methods for thorough sifting, there is still too large a class of so-called functional diseases of the stomach which in reality is made up largely of sufferers from visceroptosis, pyogenic infections, early myocardial or valvular disease, hyperthyroidism, latent tuberculosis and syphilis.

There is a rapidly growing literature of organic syphilis of the stomach, diagnoses now being based on positive clinical Roentgen-ray and serologic findings, in spite of the contention of pathologists that the disease is rarely demonstrable in tissue examinations after operation or post mortem.

The acceptance as bona fide gastric syphilis of cases in recent reports by Smithies, twenty-six cases, Eusterman, twenty-one cases, Downes and LeWald, eight cases, Morgan, seven cases, all based on clinical, Roentgen-ray and serologic findings, will lead us to expect from other workers a great many cases of the same character. On the other hand, fewer could be accepted as undisputed stomach syphilis, if all cases were to conform to the requirements laid down by Chase, namely, a positive Wassermann, evidence of syphilis elsewhere in the body, demonstration of lesions in the stomach by Roentgen ray, and finally, therapeutic improvement.

A question of great theoretical interest as well as practical importance is how we shall classify cases which meet only the first and last of these requirements, that is, those with stomach disorders showing positive Wassermanns in which all symptoms are relieved by antisyphilitic treatment.

In the light of the newer pathology syphilis may be said to affect the stomach in some one or all of the following ways: (1) by producing gumma, erosion or endarteritis in the organ itself; (2) by causing demonstrable structural changes in other organs closely situated anatomically or allied in function to the stomach; (3) by producing changes not recognizable histologically, but due to spirochetal action direct, or through the agency of its toxins on the stomach itself, on the general nervous system, or on the blood.

In the case of the first two groups, that is, cases in which gross structural changes are presented, the striking and urgent character of the symptoms and physical findings usually lead to the employment of the Roentgen ray, the Wassermann reaction and often to surgical operation. The very gravity of the symptoms is the salvation of these patients.

Unfortunately the third group of cases, showing no gross changes in organs, presents manifestations of such mild and varied character, often in so many different parts of the body, that the stomach symptoms may at times be obscured by other features and the general impression of nervous instability leads one to brand the patient as neurotic or as having nervous dyspepsia. Boas says:

> By nervous dyspepsia the authors who have paid special attention to this subject, Von Leube, Stiller and Ewald, understand a variety of conditions. Nervous dyspepsia is not a disease but a symptom complex in which organic changes connected directly with the digestive organs may be detected or absent.

The idea of syphilis as a cause of functional gastric disorders is by no means new, as evidenced by many older textbook statements; for example, Hyde, so long ago as 1888, said: "It should not be forgotten that a long list of functional disorders of the alimentary canal might be enumerated as of occurrence in the syphilitic subject which are often due to the toxic influence of the disease (cachexia, etc.)"

Before the discovery of the spirochete and the complement fixation test, the diagnosis of syphilis as a cause of these disorders rested on the history, with its usual denial of infection, on very uncertain physical evidences and finally on the therapeutic test. Since the discovery of these most positive evidences we have been compelled to acknowledge the disease as exceedingly common in all grades of society and very often nonvenereal in the method of its acquirement. Though still "visited as an iniquity of the fathers upon the children," it no longer carries the moral damnation of original sin.

This radical change in mental or moral attitude toward syphilis has put medicine forward a tremendous stride. As matters now stand, the demonstration of the presence of active syphilis depends on obtaining a positive Wassermann reaction on the blood or spinal fluid, and hence the performing of routine tests on all medical cases, especially those with stomach symptoms, becomes most desirable. A few statistics of such examinations from recent literature offer some variable but suggestive results. Horner in 500 cases finds positive 13.8 per cent., Moore in 418 cases finds positive 13.4 per cent., Edsall in 1,696 cases finds positive 9.4 per cent., and forty-six of the latter had gastro-intestinal symptoms.

In the discussion of his figures Edsall remarks that "the most striking fact brought out is the much greater frequency of gastro-intestinal manifestations (not gastro-intestinal syphilis) than we have thought till recent years."

The group of vague gastric disorders in which syphilis is believed to be concerned is largely made up of congenital cases lacking the classical picture of the disease and hence unrecognized and untreated; congenital or acquired cases suspected and insufficiently treated; and acquired often nonvenereal syphilis, of a mild type because of a weak strain of infecting organism or unusual resistance of the patient. All of these types were formerly called merely latent syphilis.

Since Warthin finds spirochetes in cardiac muscle as well as in other organs which show no lesion, "which according to the older knowledge would be classed as syphilitic," we may accept his theory for the periods of latency in persons who, though free from symptoms for decades, show abundant organisms in their tissues. He assumes that a symbiotic relation exists between the organisms and the body cells.

This view accords with the conclusions of Nichols and Hough, from experimental data, that "syphilis is not to be thought of as a chronic septicemia extending over years, but rather a complex of local infections which date back to an early septicemia and the character (strain) of spirochete eventually determines the picture of the disease."

This view of latency, as symbiosis, would explain more satisfactorily such phenomena as the late (parasyphilitic) manifestations and the negative complement fixation test which becomes positive after provocative doses of antisyphilitic remedies. As to the exact method by which gastric symptoms are produced in syphilis without demonstrable lesions of the stomach we can at present only speculate. If we exclude from consideration cases with definite lesions of the central nervous system, two ways seem possible, either by the actual localization of spirochetes in the stomach or through absorption and circulation of toxins in the

blood. The latter would seem analogous to the early gastric disorders seen in pulmonary tuberculosis, in which no lesion of the stomach exists.

A vast amount of work must yet be done to clear up the pathology of syphilis and establish the Wassermann, luetin and various spinal fluid tests on an entirely satisfactory basis. But the application of our present knowledge is revolutionizing internal medicine and enabling us to save many syphilitic gastric patients from years of unnecessary suffering, surgical tampering or even worse fates.

Herewith are appended case reports believed to be illustrative of some of the types discussed.

Case 1.—White, married man, 36 years old, complained that for five weeks he had had "stomach trouble" nearly continuously. From three to four hours after a meal, especially if he had exercised much, he felt a considerable pain in his stomach. This pain remained localized, not radiating, and was relieved on taking any sort of food. He believes the pain was worse after a heavy than after a light meal. He did not vomit, nor did he have heart burn or eructations. The bowels were somewhat constipated. His weight was off from 12 to 15 pounds.

His trouble was diagnosed as syphilitic gastric dyspepsia and progressive tabes.

The history shows that this man has had a facial paralysis for nine years and that he had something like syphilis a few weeks preceding its development. The treatment he received was the usual hot springs vacation with very casual dosing for a few weeks with a liquid containing mercury and potassium iodid.

About one year later, or Sept. 25, 1907, he consulted me because of pain and fulness in his stomach, coming on an hour or two after eating. His bowels were regular. He had lost 25 pounds in a year.

Examination then showed right-side facial palsy, negative heart, lungs and abdominal viscera, urine containing a few hyaline and granular casts. The blood was negative to ordinary tests, the Wassermann not being then in vogue.

Examination of stomach contents, which was then very much in vogue, showed after an ordinary Ewald meal total contents 90 c.c., hydrochloric acid 16, total acid 25. From these findings it was thought that no serious stomach disorder was present, in other words, our old friend, "neurosis or purely functional" was chosen for a diagnosis, and the patient was advised to feed up and renew his antisyphilitic treatment and report in ten days. He was not seen again till 1910, three years later, when he was much improved, but still had his facial paralysis.

A few weeks ago he returned complaining that for five weeks he had pain after meals, as already described. The periodicity and general character suggested duodenal ulcer, but there being no demonstrable blood in the stools and no abdominal tenderness, this diagnosis was held in abeyance.

He was found to have delayed right patella reflex and slight Romberg. The Wassermann reaction was three plus positive. Examination of eye grounds and auditory nerves preliminary to giving salvarsan was made and it showed defective hearing in both right and left ears and marked arteriosclerotic optic disk.

In view of these changes and the risk involved in large dosage of arsenic, we decided on slower treatment, and accordingly he was given mercury salicylate intramuscularly with increasing doses of potassium iodid. Following marked improvement in the eye and ear conditions, he was later given arsenobenzol.

No direct attention has been paid to the stomach disorder except for some suggestions as to diet and laxatives. The improvement in the patient has been very marked, the stomach symptoms having entirely cleared up and though he still has a long way to travel, I hope the syphilitic condition may be arrested and further damage to the gastro-intestinal tract and nervous system be averted.

Case 2.—American woman, married, 33 years old, presented as the principal complaint these facts: For about four or five months had had severe pain in the stomach region and also in the right thorax. She had a feeling of "rawness and soreness" in the stomach and suffered from nausea and vomiting when the stomach was empty. She had on two occasions vomited blood, which was at one time bright red and at another dark, there being 1 to 2 ounces each time. A week before she had passed some pus and blood in the stool. She had a poor appetite and was constipated. Having lost 20 pounds and much strength, she was bedridden and greatly depressed mentally. Another condition which was thought possibly to have some relation to the stomach trouble was excessive uterine flow at times, both metrorrhagia and menorrhagia, with moderate leukorrhea.

Her case was diagnosed as stomach ulcer, probably gumma.

Some other points of interest in the history are that she had pneumonia followed by pleurisy thirteen years before and mild attacks of pleurisy every winter following. Up to six years before she also had bronchitis every winter. She had one living child and no history of miscarriages. Her husband is in excellent health, having no suspicion of syphilis.

The examination shows a thin anemic woman with signs of old pleurisy at the right base, a very tender resisting area in the left upper abdomen above and to left of the umbilicus, in other words about over the stomach.

She has a moderate secondary anemia with hemoglobin 55, 4,600,000 red cells, 5,500 white, blood pressure 108 and 80 mm. of mercury, urine negative, stool with no occult blood and no ova.

The examination of the uterus showed an enlargement of this organ with an eroded, easily bleeding cervix and a small mass in the posterior cervical lip.

The general picture here presented suggested strongly carcinoma of the uterus with probable metastasis in the gastro-intestinal tract. The patient was seen by Dr. L. H. Watkins, who diagnosed an acute endocervicitis. It was decided to take her to the hospital and examine the cervix further, making a microscopic examination of the tissue, and study further the stomach condition by means of the Roentgen ray.

The Roentgen ray showed both with fluoroscope and plate a definite lesion (probable ulcer) on the lesser curvature immediately beneath the tenderest point on the abdomen. The characteristic incisura in the greater curvature directly opposite was also noted with a stoppage of the bismuth and with a ragged appearance at the point of suspected ulceration.

Further examination of the uterine condition by Dr. Watkins confirmed the diagnosis of endocervicitis, probably of Neisser type. The Wassermann reactions, made by two careful observers independently, were both positive, three plus.

The usual ulcer diet and regimen were instituted and a few days later the patient was given 0.6 gm. of salvarsan. She has since been on mercury by intramuscular injections and potassium iodid. Some little attention has of course been paid to diet, laxatives and medication, but the marked and prompt improvement noted and which is continuing both in the behavior of the stomach and in the general condition, together with a gain of 40 pounds in weight and a clearing up of the anemia, we believe has been largely due to antisyphilitic treatment.

Case 3.—An American mechanic, 27 years old, had stomach trouble, weakness and "generally down-and-out feeling for three or four years." He felt so bad that he was unable to work except a day or two a week.

Three years before, after much treatment by different doctors, the inevitable happened, his appendix was removed by a surgeon who told him it was chronically inflamed and was the cause of all his digestive disturbance.

The symptom complained of at that time and which persisted after his separation from his appendix were heaviness in the epigastrium, with much distention with gas, constipation and dizziness. On careful inquiry into the history it was found that he had a definite, typical syphilitic infection in 1907, just eight years before. Following this he took about six months' internal treatment. Again three years before he took salvarsan intravenously. Up to the time of examination there had been no particular change in the gastro-intestinal or general condition.

This patient was sent to the hospital May 24, 1915, for study, and it was found on Roentgen-ray examination that, aside from a redundant sigmoid, there was no pathologic condition present in the alimentary tract, the stomach itself being absolutely normal.

A diagnosis of syphilitic gastric dyspepsia was made.

A Wassermann reaction made on entrance showed moderately positive, two plus. The blood findings aside from this were not striking. The urine, blood pressure and general physical examination were negative. The stool showed no occult blood. No gastric analysis was made.

On May 31, 1915, the patient was given salvarsan and a week later intramuscular injections of mercury were begun, followed in the intervals with potassium iodid. This man has now been under observation more than a year and is quite well of his stomach trouble.

SYPHILIS IN THE SOUTHERN NEGRO*

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The question of the prevalence of syphilis among the negroes of the South has, until recently, been the subject of much discussion and conjecture, but of little scientific investigation.

It is the belief of the majority of physicians working among the negroes in the South that a great percentage of them are syphilitic.[1] On the other hand, it is the belief of other clinicians, working among a better class of negroes, especially in the North, that such an estimate is not correct.[2] Most of these estimates, however, are based solely on clinical observations and not on systematic and strictly scientific investigations.

The results of the few systematic attempts at the solution of this question regarding the prevalence of syphilis among the negro population of the South have been somewhat contradictory. Hindman[3] has reported 16 per cent. of infections as determined by routine Wassermann reactions, among 255 male negroes and the same percentage among 218 female negroes incarcerated in the Georgia Insane Asylum. Ivey[4] reports 25 per cent. of 357 male insane negroes, and 29 per cent. of 349 female insane at the Mt. Vernon Insane Asylum of Alabama, as having positive Wassermann reactions. Lynch[5] reports 65 per cent. of negro women, and 53 per cent. of negro men, applying at the outclinics of Charleston, S. C., for treatment, as having positive Wassermann reactions. Unfortunately, however, Lynch's series of tests is limited to only 102 in all. Wilson,[6] in a series of tests done on seventy-six healthy negro girls in an orphan asylum of Baltimore, found 7.8 per cent. to have a strongly positive Wassermann reaction.

As a result of this very decided variation in the figures of various observers, it has seemed to us that a systematic and more or less extensive series of observations as to the prevalence of syphilis among the negroes would not be out of place.

The work which we are to report was carried out on negroes in the city of Galveston. The majority of the negroes examined were of the laboring class, being for the most part dockworkers, longshoremen, sailors and common laborers, with their wives and families.

The reactions which we have employed in the attempt to detect syphilitic infection were the Wassermann and luetin tests. The Wassermann tests were done after the modification of Noguchi, using liquid reagents, however, instead of paper. The luetin tests were done in the ordinary manner, 0.07 c.c. being given intradermally. All tests were carried out in the medical clinics and laboratories of the University of Texas, Department of Medicine; the blood of each negro admitted to the wards of the John Sealy Hospital, regardless of service to which admitted, being taken as soon after admission as possible and the luetin reaction being given at the time the blood was taken. No Wassermann or luetin reaction was considered positive unless the reaction was an undoubted positive, doubtful reactions being considered negative. Only Wassermann reactions of one plus (50 per cent.) or more fixation were considered positive, the classification of Craig being used.[7] All tests were done in the same laboratory and interpreted by the same observer.

The series which we have examined in the above manner consists of about 1,200 adult negroes, fifteen years of age or over. On 600 of these negroes both the Wassermann and luetin reactions could be successfully followed, while in the remaining 600, only the Wassermann reaction could be obtained. Among the latter 600 patients, however, are included all those on whom luetin reactions were done, but who disappeared from view before the reaction could be satisfactorily interpreted. Also among these patients are included all those having had potassium iodid in any amount before the interpretation of the luetin test, for there seems to be no doubt, in our experience, that a positive luetin can be produced at will on non-syphilitic individuals, by the previous administration of the iodids in sufficient quantities.

Of the 1,200 negroes examined in this manner, 34 per cent. gave definite positive Wassermann reactions. Of the 600 negroes on whom both Wassermann and luetin reactions were done, 35 per cent. gave definitely positive Wassermanns, and 18 per cent. gave positive luetins, while the total percentage giving positive reactions to one or both of these tests was 42 per cent., 7 per cent. giving positive luetins with negative Wassermanns. Such statistics as these are of comparatively little real value, however, in arriving at a true idea as to the actual prevalence of syphilis among a race of people. It is a well-known fact that the percentage of syphilis among patients applying to clinics for treatment is always much higher than among the healthy working classes, so that, before drawing any conclusions as to the actual prevalence of this disease, as well as its actual relation to sickness and death, it becomes necessary to determine the percentage of healthy and robust negroes who are infected with syphilis.

In order to determine, therefore, the actual prevalence of syphilitic infection in the healthy working negro, we have made an especial study of some 200 such persons. Among these are included all negroes admitted to the surgical wards of the hospital, suffer-

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* Read before the Section on Practice of Medicine at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

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2. Hazen, H. H.: Syphilis in the American Negro, THE JOURNAL A. M. A., Aug. 8, 1914, p. 463.
3. Hindman: Am. Jour. Pub. Health, 1915, v, 218.
4. Ivey: Med. Rec., New York, 1913, lxxxiv, 712.
5. Lynch: South. Med. Jour., 1915, viii, 450.
6. Wilson: New York Med. Jour., 1916, ciii, 585.
7. Craig: Am. Jour. Med. Sc., 1915, cxlix, 41.

ing from accidental injuries, such as broken legs, cuts, stab wounds, burns, etc. Particular care was taken in selecting these negroes to rule out all who were otherwise diseased or disabled than from their injury. Along with these cases were included, also, a small number of normal obstetric cases. Of these various, apparently normal cases, 24 per cent., approximately, gave positive Wassermann reactions, 12 per cent. gave positive luetin reactions and 28 per cent. gave positive reactions to either the Wassermann or the luetin tests.

In order to determine, moreover, what percentage of syphilis might be hereditary among the negroes and what acquired, we attempted a very limited study of negro children, ranging in age from 1 year to 12 years, in whom it was presumed that any syphilitic infection must be inherited. These children were, however, admitted to the hospital complaining of some ailment, either medical or surgical, so that the figures which we have obtained are probably somewhat higher than would be met with among absolutely healthy negro children. They are sufficient, however, to show that the majority of the cases of syphilis among the negroes are of the acquired type, nature, fortunately, taking care of many of the patients with inherited syphilis by affording them an easy death either before or immediately after birth, as well as by rendering the parents sterile. Of fifty-two such examinations which we have made, we found only five positive Wassermann reactions, giving a percentage of about 9.5. In addition, however, one patient had positive luetin reaction with a negative Wassermann, making the percentage slightly higher.

Of greatest interest to us, as clinicians, was the study and analysis of the incidence of positive Wassermann and luetin reactions among patients suffering from the various common diseases. This subject we hope to take up in more detail in a paper to be read elsewhere, but a brief summary of our findings would, perhaps, not be inappropriate here.

Taking up first the purely medical cases, cases admitted to the medical wards of the hospital, we find that we have some 400 in our series. Of these, about 40 per cent. gave definitely positive Wassermann reactions. Adding to this percentage those cases which gave positive luetin reactions with negative or doubtful Wassermann reactions (twenty-one cases), we have a total of 45 per cent. giving strong laboratory evidence of the existence of syphilis. Analyzing the incidence of positive reactions in the various common diseases, we find that such diseases can be readily grouped into three divisions, from the standpoint of syphilitic infection. First, we have those diseases which seem to have no direct connection with syphilitic infection, since the incidence of positive reactions in these is remarkably constant, ranging always somewhere around that percentage which we have found to be usual in healthy negroes. Next, there is a group of diseases in which the incidence of positive reactions is somewhat higher, suggesting that while perhaps syphilis is not a direct cause of the disease, or at least not the sole cause, nevertheless, syphilitic infection must be a contributing factor toward its occurrence. Finally, we have certain diseases in which we have learned to predict a positive reaction in almost every instance, diseases which are certainly caused by previous syphilitic infection.

Among the first group of diseases, which, apparently, have no connection, either direct or indirect, with syphilis, and comprising some 200 cases in all, we find the following diseases, all showing an incidence of positive Wassermann reactions of somewhere around 30 per cent.: pulmonary tuberculosis, sixty cases, with 23 per cent. positive Wassermann reactions; typhoid fever, thirteen cases, 22 per cent. positive Wassermann reactions; malaria, seven cases, 12 per cent. positive Wassermann reactions; pneumonia, thirty cases, 30 per cent. positive Wassermann reactions; dysentery, twelve cases, 20 per cent. positive Wassermann reactions; pellagra, twenty-two cases, 13 per cent. positive Wassermann reactions; cancer, 17 cases, 12 per cent. positive Wassermann reactions; chronic interstitial nephritis, four cases, 25 per cent. positive Wassermann reactions, and arteriosclerosis, eighteen cases, 23 per cent. positive Wassermann reactions.

Still other diseases, mentioned above as perhaps indirectly associated with previous syphilitic infection, have shown constantly a rather higher percentage of positive reactions than we have learned to consider normal for the negro. The most striking type of disease of this second class is a form of diffuse nephritis to which the negro of these parts seems peculiarly susceptible. We are, all of us who work in the South, acquainted with the common "dropsy," which is so well known to the darkies themselves. This disease is manifested clinically by a massive anasarca, by dyspnea, by cardiac irregularities, hypertrophy and dilatation. Usually the disease is rather rapid in its course. Pathologically, an acute or subacute diffuse nephritis is usually found, involving as a rule both glomerular and tubular elements of the kidneys. Excluding all cases of pure chronic interstitial nephritis and all cases of renal sclerosis, we have studied sixty cases of this diffuse nephritis. Of these, twenty-five gave negative reactions, twenty-four gave positive reactions, and eleven gave doubtful reactions. Of the latter giving doubtful reactions, five gave positive luetin reactions, making twenty-nine cases in all giving positive reactions to one of these tests, a percentage of 48 per cent. positives as against only 40 per cent. clear-cut negatives.

Still another affection common to the negroes, as all who work among them are aware, is a spastic paralysis or paresis, occurring especially in young or middle-aged negroes, often of one limb or group of muscles, but still more frequently, perhaps, involving more than one group. A certain number of such cases are, of course, purely arteriosclerotic in origin, but that a large percentage of them are syphilitic is shown from the fact that out of thirty-four of such patients studied in this series, 50 per cent. gave positive Wassermann reactions. The majority of those giving positive Wassermann reactions, moreover, gave positive reactions in the spinal fluid also.

Another disease which would seem to be connected with syphilitic infection in some way, although not certainly caused solely by that infection, is myocarditis. From this group we have excluded as far as possible all cases of myocarditis complicated by valvular lesions of an organic nature, also all cases complicated by nephritis. Twenty-one such cases were observed. Of these, eight, or 40 per cent., gave positive Wassermann reactions, three, or about 10 per cent., were doubtful, and 50 per cent. were negative.

Cirrhosis of the liver, usually, among the negroes, consisting of a large, hard and tender liver, would seem to be largely specific in origin, since out of six

cases observed, four gave strongly positive Wassermann reactions.

Of the third type of disease common among the negroes, but which is almost constantly associated with a positive Wassermann reaction, aneurysm of the thoracic aorta is a good example. Of twelve such cases in this series, ten gave definitely positive reactions, one gave a doubtful and one a negative reaction. Three cases of abdominal aneurysm were studied. Only one of these gave a positive Wassermann reaction. Two were negative both to Wassermann and luetin reactions. One carotid aneurysm gave a positive reaction, one femoral a negative, and one iliac a negative reaction.

Twenty cases of aortic insufficiency were observed in this series. Fifteen of these, 75 per cent., gave positive Wassermann reactions and 85 per cent. gave positive reactions to either Wassermann or luetin tests.

One other disease stands out prominently among the medical cases as being commonly associated with positive reactions for syphilis. This is a mild type of bone pain, usually called rheumatism or lumbago by the sufferer, characterized clinically by bone or joint pains, without, however, any redness, swelling or deformity. There is usually no rise of temperature. A very characteristic point in the history is the fact that the pains are usually worse at night. Headache is apt to be a complication. Joints are especially apt to be affected, although the long bones are not infrequently involved, as well as the ribs, spine and skull. Local tenderness is not marked as a rule. Such cases are exceedingly common in our clinics, especially in the outclinics. Of thirty such cases studied, twenty-five, or about 80 per cent., gave strongly positive Wassermann reactions, and 84 per cent. gave either positive Wassermann or positive luetin reactions.

OCCURRENCE OF SYPHILIS IN THE COMMONER DISEASES, AS DETERMINED BY POSITIVE WASSERMANN REACTIONS ON THE NEGRO

Disease	No. Cases	Per Cent. Positive Wassermann
Apparently healthy adult negroes	200	24
Negro children	53	9.5
Pulmonary tuberculosis	60	23
Typhoid	13	22
Malaria	7	12
Dysentery (amebic and bacterial)	12	20
Pneumonia	30	30
Pellagra	22	13
Cancer	17	12
Arteriosclerosis (or senility)	18	23
Chronic interstitial nephritis	4	25
Diffuse nephritis (often subacute or acute)	60	48
Paralysis	34	50
Myocarditis (uncomplicated by organic valvular lesions or by nephritis)	21	40
Cirrhosis of liver	6	66
Aneurysm of thoracic aorta	12	83
Aortic insufficiency	20	75
Syphilitic bone or joint pains	30	80
Rectal abscess	4	75
Rectal stricture	10	90
Rectal fistula	13	61
Hemorrhoids	9	22
Chronic leg ulcer	18	55

A study of Wassermann reactions done on negroes admitted to the surgical wards of the John Sealy Hospital, about 300 cases in all, shows a lower incidence of positive Wassermann reactions than on the medical wards, only 34 per cent. of these giving positive Wassermann or luetin reactions, as distinguished from 45 per cent. of positive reactions obtained on the medical service. Only three diseases stand out prominently among the surgical cases as being especially associated with positive Wassermann reactions. The most striking of these is the well-known "rectal trouble" of the negro. These rectal troubles are found on investigation to be of five kinds, namely, hemorrhoids, fistula in ano, perirectal abscess, stricture of the rectum and chondromas. With the exception of those patients suffering from hemorrhoids, nine of whom were examined, with an incidence of positive Wassermann reactions of only 22 per cent., all of the remainder of these rectal troubles would seem to be closely connected with syphilitic infection, since out of thirteen patients with rectal fistula, eight, or 61 per cent., gave positive Wassermann reactions; of four with rectal abscesses, three gave strongly positive reactions and one a doubtful reaction; and of ten with strictures of the rectum, nine gave strongly positive Wassermann reactions. It would seem, therefore, that rectal trouble in the negro is strong presumptive evidence of syphilis.

One other surgical disease standing out prominently in our series as being frequently associated with positive Wassermann reactions is the chronic leg ulcer. Out of eighteen such cases, ten gave positive Wassermann reactions (55 per cent.), and one a doubtful reaction. Finally, of seven cases of periostitis observed, three gave strong positive Wassermann reactions, one a doubtful, and three a negative reaction.

Of 200 gynecologic cases examined, 29 per cent. only gave positive Wassermann reactions. Among the gynecologic cases, no particular disease has been peculiarly associated with positive reactions. Out of thirty-two obstetric cases, ten gave positive Wassermann or luetin reactions, a percentage of 30. Only three miscarriages were observed among these. Two of these miscarriage cases gave positive reactions and one a negative.

In a study such as this one of the prevalence of syphilis in any particular class of individuals dwelling in a community, it is of course important to determine, if possible, the incidence of the same infection among the other classes of the same community. Such a determination among the white patients admitted to the wards of the John Sealy Hospital, in a limited number of cases only, however, has been done. Before reporting the results of this investigation it would perhaps be well to say a few words in explanation of the class of white people on which this work was done. We treat in the wards of the John Sealy Hospital two entirely different classes of persons. On the one hand, many are small shopkeepers, farmers from the surrounding territory, clerks, tradesmen, etc. On the other hand, a large number are of the so-called lower classes, including sailors, longshoremen, common laborers, and, finally, the human derelicts or the dregs of social life.

The incidence of syphilitic infection among the better classes of these patients, taken as a routine on admission, would seem to be considerably lower than that among the negroes, averaging somewhere about 20 per cent. (fifty cases only). On the other hand, the incidence among the latter class of patients, those at the bottom of the social scale, differs very slightly from the incidence found among the negroes of the same class, averaging about 30 per cent. (fifty cases).

Finally, in a series of Wassermann tests done on about fifty healthy medical students, the tests being done in a routine manner, without selection, we have not yet found a definitely positive reaction.

CONCLUSIONS

The conclusions which we feel that we can draw from this work are as follows:

1. The incidence of syphilitic infection among apparently healthy adult negroes in this community varies between 25 per cent and 30 per cent.

2. The infection is largely acquired, since it is much lower in incidence among children under the age of puberty.

3. The incidence of syphilitic infection among sick negroes is considerably higher than among the well, averaging between 40 per cent. and 50 per cent.

4. Certain diseases seem to be directly connected with previous syphilitic infection, as shown by extremely high incidence of positive reactions. In other diseases, moreover, syphilis, although apparently not being the direct, or at least the sole cause of the disease, would seem to be connected with its occurrence in some way, chief among these being the characteristic form of acute or subacute diffuse nephritis, which is one of the most common causes of death among the negroes.

5. The occurrence of syphilis among white people of the same social class as the negroes would seem to be about the same as that among the negroes. In the better classes of white people, however, the occurrence is much less, while in the best classes (young and healthy medical students), it is almost nil.

6. Syphilis is undoubtedly one of the chief causes of death and disease among the negro, ranking as high or higher than tuberculosis, Bright's disease and pellagra, which are the three other chief causes of death and disability among that race in this community.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. LULL AND M'NEIL

DR. FRANK SMITHIES, Chicago: The subject of visceral syphilis is in evolution. The earlier pathologic studies are incomplete. Dr. Warthin of Ann Arbor has demonstrated in the pancreas lesions similar to those found in the aorta and myocardium. He also demonstrated spirochetes in the pancreas parenchyma. It would seem that we must cease to regard syphilis as a dermatologic ailment but consider it broadly as a spirochetemia. We cannot state that the syphilitic virus, the spirochete, does not lodge in the wall of the stomach or other hollow viscera. It is extremely likely that it does. Its lodgment there is probably delayed on account of the active motility of the stomach, and added vascular protection. We should not wait for the development of a tumor or malformation before classing lesions as syphilitic. Such are terminal affairs. In all cases of chronic dyspepsia one should make a Wassermann test not only of the blood serum but of the spinal fluid as well. A positive reaction should always be confirmed by a second test. We do not think that the luetin test is a reliable clinical guide as to the presence or absence of syphilis. If one approaches the subject of visceral syphilis from this standpoint he will be surprised at the comparatively large number of cases that come in diagnosed "dyspepsia" which will reveal some venereal history which has been forgotten or hidden and in which positive serum tests are obtained. In some instances the disease may be congenital. In syphilitic cases the clinical manifestations are very similar to those of dyspepsia from other gastric lesions. One should not wait until tumor deforms the stomach before suspecting syphilis. When tumor has developed it indicates the end of the story. Gastritis, ulceration or cirrhosis usually precede tumor formation.

Reports of great improvement following specific treatment of lesions which are considered syphilitic should be considered conservatively. In 80 per cent. of chronic ulceration of the stomach, especially in syphilitic ulcers, there is a history of intermittency or "periodicity." Favorable intervals often occur whether or not treatment is instituted. Out of 33 cases of visceral syphilis in my series only five can at present be considered clinically well. In seven cases there was no improvement.

DR. FENTON B. TURCK, New York: Gumma of the stomach is an unusual lesion and the number of cases of demonstrable gummas interfering with gastric function is very small. On the other hand, a large number of syphilitics have stomach disorders sometimes of a very distressing sort. In common with other general diseases, syphilis can be manifested by gastric symptoms quite apart from any local syphilitic lesion. Since syphilis is recognized as a spirochetemia, not essentially unlike an invasion of the blood stream by bacteria or plasmodia, the resultant effects are very similar to those of chronic malaria, tuberculosis or low grade systemic infections. Some years ago a physician in Texas made a special report to me on gastric symptoms in chronic malaria. His figures proved the same insufficiency of motility with stasis of stomach contents as is found in tuberculosis and syphilis. The factors responsible for these symptoms are changes in nonstriated muscle as result of direct toxic influence and venous stagnation in splanchnic vessels resulting in an asphyxia of muscle cells and consequent atony. These conditions were found in cases in which no obstruction was demonstrable; the histologic changes were shown in sections from the stomach wall which were taken in attempting operation for relief of gastric symptoms. These microscopic changes were of a hyaline character with a degeneration of muscle cells without infiltration of the gummatous type. Antisyphilitic treatment does not always relieve symptoms secondary to long standing cell poisoning; direct, systematic treatment of the stomach is indicated for reduction of splanchnic congestion and stimulation of gastric motility and secretion.

SURGICAL ASPECTS OF INDUSTRIAL ACCIDENT INSURANCE

ILLUSTRATED FROM CALIFORNIA EXPERIENCE *

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SAN FRANCISCO

Legislation embodying into laws the ideas of employers' liability, workmen's compensation and compulsory industrial accident insurance in its historical development constitutes a sociologic movement of the greatest significance and of the widest application. It affects not only all communities in the states in which it has been adopted, but also all classes in those communities, profoundly influencing the cost of production of a great variety of commodities and in consequence the cost of living and material development.

This latest phase of the never ending struggle between labor and capital has brought forth an entirely new conception of at least certain relations of workman and employer to each other, to industry and to the public.

Because fundamentally this movement has to do with the health and physical welfare of the laboring classes, relations have developed with the medical profession in an altogether special sense. Broadly speaking, the law in its present form is largely designed to afford to the injured workman the best medical and surgical service available, and this is made a matter of social economy, an entirely new sort of enforcement of a principle long recognized as to the duty of surgery to restore the injured workman to his earning capacity at the earliest possible moment. I mean that the law has made it sharply to the pecuniary interest of a large body of men, the employers through the insurance carriers, to provide such surgical service for

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* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

injured employees as will insure their return to productivity to the greatest degree possible and in the shortest possible time. This cannot fail profoundly to influence medical and surgical practice and medical education.

The problem of providing for the relief of workmen, their families, widows and orphans is a very old one, and attempts at its solution by organization date back even to the guilds of medieval Europe; but until the present movement was inaugurated, attempts at solution of the problem have always been from the standpoint of mutual aid on the part of workmen themselves or else on the basis of charity.

The principle of the state assessing the employer for the cost of medical and surgical aid and monetary compensation of injured workmen, making it a matter of law and right as opposed to charity, is of German socialistic origin, the first important legal expression of the same based on older Prussian laws being the German employers' liability law of 1871.

So revolutionary a principle could not be adopted except on an experimental basis, and therefore it was made applicable only to the more obviously hazardous occupations. It put particularly on mine owners the burden of caring for injured employees, and was based on fault; but the burden of proof of fault bore so heavily on labor that it signally failed of its object and resulted in little more than the engendering of a prodigious number of embittering suits at law. It was an entering wedge, however, and led directly to the compulsory industrial accident insurance laws of 1884.

Following the lead of Germany, yet often basing their practice on different principles and with variation growing out of accommodation to laws and customs already in force and organizations already active in the same direction, all the great powers of Europe and many of the smaller states have adopted laws more or less effectively solving the problems of workmen's compensation, employers' liability and social insurance. Austria in 1887, Hungary in 1891, Norway in 1894, Finland in 1895, France and Italy in 1898, Spain in 1900, Holland in 1901, Russia in 1904, Belgium, Switzerland, Sweden, Denmark, Greece, Serbia, Bulgaria, Peru and others, including even Iceland, have adopted and are enforcing such laws.

England passed the employers' liability act in 1880 and the workmen's compensation act in 1897, which provided that compensation should be made by the employer to the injured workman irrespective of negligence or contributory negligence and was made to apply to most industries. In 1900 the law was extended to agriculture and in 1906 to practically all persons in service. Moreover, certain industrial diseases were interpreted as "accidents" within the meaning of the law. The British colonies of New Zealand and those of Australia, Canada and South Africa followed suit.

Beginning with Maryland in 1902, one state of the Union after another, and the federal government have enacted laws for workmen's compensation. The original law in Maryland was declared unconstitutional, as have laws on this subject in other states; but by a process of experimentation and amendment, laws more or less satisfactory in solving the problems of workmen's compensation have been evolved and are now in force in thirty-one of the forty-eight states, while some others have the matter seriously under discussion and in the hands of commissions for investigation. The federal law of 1907-1908 was far in advance of any state law in force at the time of its enactment. It is still in force and extended by amendment till it is now applicable to employees of the government on the Panama Canal and on the Alaskan Railroad, and employees of corporations engaged in interstate commerce. It is, however, based on fault.

In 1910, New York took the lead in enacting a liability law of general application which has been followed by a great number of states in its essentials, though modified to meet local requirements and legislative ideas.

For the purposes of the present paper it is important to note that in nine states, California, Colorado, Maryland, Michigan, Montana, New York, Pennsylvania, Ohio and West Virginia, there is maintained a state insurance fund. In the seven states first mentioned the state fund actively competes with private insurance companies.

Nearly all the countries of Europe now include compulsory insurance of the working people against illness. "The cost of insurance is usually distributed between the worker and the employer, and in some countries the government also contributes a share. By this device the employer is compelled to bear some portion of the cost of sickness among his employees, and the worker receives larger benefits than he could purchase unaided."

Notwithstanding the dismay of the medical profession in England when this law of compulsory insurance of workmen against illness was first promulgated (1911) which was marked by a veritable strike of the British Medical Association, the law is being enforced and the fears of loss of income which actuated the medical men have not materialized, being more than neutralized by the realization of the previously inadequate medical care the laboring classes received and the consequent increase of volume of professional service provided under the new law. The fact is that the incomes of a great body of medical men in Great Britain have increased as a result of enforcement of the law, and more adequate medical and surgical service has been rendered the working classes, although the quality thereof is criticized as not having improved in proportion.

It is not possible to foresee the limits to which this movement may continue in this country, but it is only a short step from industrial accident insurance now effective in thirty-one states to compulsory insurance of workmen against accident and illness in all of the states. There is much difference of opinion as to whether the whole matter should not be taken over by the federal government and the law made uniform throughout the country and be enforced by a government bureau. Against this view is the practical fact that in thirty-one of the forty-eight states there is already provided most of the machinery required for the economical enforcement of such laws, machinery which is more attuned to local conditions than a federal bureau is likely to be. On the other hand, the general government would be less likely to go to the extremes of socialism which many foresee as the logical conclusion of present tendencies in state legislation.

A movement so widespread over the world is not to be checked; it must continue to spread and to develop, and must be reckoned with as a permanent sociologic institution in which the medical profession is deeply concerned.

Some conception of the effort the laboring classes have made by mutual insurance schemes against sick-

ness and other risks may be obtained from a study of the so-called friendly societies historically traceable to the guilds.

Naturally in such schemes insurance against sickness took a prominent place, and until with the development of modern methods in manufacture, the use of steam and electric power, the use of complicated and often fast running machinery, of explosives, etc., sickness was a greater risk than industrial accident.

In the latter part of the nineteenth century, friendly societies increased greatly in numbers all over Europe. In England alone a few years ago there were 25,000 such societies with a membership of about 6,000,000. They insured against a great number and variety of risks — sickness, accident, old age, decrepitude from other causes, loss of employment, death, loss of a workman's tools, additions to the family, funeral expenses and in some cases even wedding outfits.

The great increase in such societies was an effort to meet the changing conditions of modern employment, and was in effect a protest against the inadequacy of the law in protecting wage earners and people of small means against losses which were often the cause of the complete submergence of these people in abject poverty.

Such organizations, having little capital back of them, were often not financially sound, and hence were not altogether reliable in affording relief. In Germany in many instances it was made a matter of contract and later of law that the employer contribute a certain proportion of the funds.

REDRESS UNDER THE COMMON LAW

In England, previously to 1880, the date of the passage of the employer's liability act, aside from the benefits to be derived from membership in the friendly societies, the injured workman could seek redress from his employer only under the common law, and the same was true in this country, whose fundamental law is based on the English common law, and is still true in some states.

Under the common law an injured employee could claim compensation from his employer only when the accident could be shown to be due to the fault of the employer, against which contributory negligence, common employment and contractural assumption of risk successively became valid defense.

As long, however, as industries were carried on on a small scale, the employer of a few men, working generally alongside of his employees, the common law rules were comparatively satisfactory, but with the development of industries on a large scale, especially under control of great corporations, the relations became so complex that liability based on fault was most difficult to establish, and the defense of contributory negligence and common employment became so effective as to work an intolerable hardship on injured employees, who not only had to bear practically all the risk of physical injury but most of the monetary risk as well, although they were least able to do so.

Under the common law, medical and surgical service to injured and sick employees was on an even worse basis. Men with incomes under $1,000 a year had little margin from which to provide premiums for life or other insurance, and little to pay for medical and hospital service, especially when, as was too often the case, the bread winner was the one sick or injured. They were forced to take advantage of free clinics and charity hospitals with the attendant humiliation, the distaste for which would often lead a self-respecting man to consult a physician, pay what he could and then run up a doctor's bill of such size as to make the honest workman the debtor of the doctor for the rest of his natural life. Or, finding himself unable to pay, he would let the bill run on till written off the doctor's books. Again he would join a lodge or a "hospital association," or, which is not much worse, make his own diagnosis and fill his stomach with "patent medicines" and his closet shelves with the empty bottles.

Medical and surgical fee bills established by local medical societies in various communities based on the average incomes of the so-called better or at least more prosperous classes in those communities provide charges altogether out of reach of such workmen; and while most medical men do a great deal of work without monetary compensation, and many permit patients with small incomes to pay what they can, only too frequently is the reverse the case, and charges made which are altogether impossible of payment without serious sacrifice on the part of the patient.

Under the common law system, large employers of labor often find it advantageous to employ on a basis of contract one or more physicians or surgeons to care for their employees, the expense in most instances being paid out of the funds created by withholding from the wages of each employee a small sum each month, generally $1, out of which also is paid the cost of hospital maintenance. Such positions of contract physician are often sought after by young medical men because thereby they are insured a living and have opportunity of adding to their incomes by doing more or less private practice in the vicinity.

This form of medical and surgical relief of workingmen answers well or poorly according to the quality of the medical man employed. Often the salary paid is too small to attract a competent man, and, again, the "company doctor" is sometimes appointed because of social favoritism rather than fitness. In general he is a sort of agent of the company whose business is the corralling of evidence which might be produced in court in defense of any action for damages the injured employee might later inaugurate, services which are apt to be looked on at company headquarters as being quite as important as the purely professional duty of attending to the patient and alleviating his suffering. He is expected to neutralize as far as possible the pernicious activities of the "ambulance chasing lawyer."

Under this system, there being no provision for the payment of indemnity for the disablement of an injured employee, the company is interested only in providing first aid and surgical and hospital care during the acute stages of illness. Except as a matter of charity it is not interested in end-results. And yet end-results are the particular things with which the injured individual and the industry as a whole are vitally concerned. A man maimed is lost to the industry and becomes a burden on the community. Moreover, it is estimated that the average cost of breaking in a new hand is $35.

Although industrial accident insurance has been in force in California only two years and a half, it has done much to lessen the evils of contract practice, and many concerns have already ceased the practice of employing physicians on contract.

The friendly societies or fraternal organizations or lodges which, as said above, have increased so prolifically during the last fifty years, are organized largely to afford medical and surgical services at such cost as to be within the reach of the laboring classes, the monthly dues providing the means for the employment of community physicians. Many such, however, extend their membership to include people in much more comfortable circumstances, who join for the purpose of securing cheap medical and surgical service.

The medical profession, therefore, finds itself opposed to what it considers exploitation of the profession. While from the standpoint of cheapness this scheme works well enough for the members of the societies, it often — in fact generally — fails to secure to the patient competent medical service. Investigation has shown that in these societies the payment to the doctor is far less than $1 a visit on the average, and in some cases as low as 25 cents. The members paying monthly dues and not so much per visit run to this doctor on the most trivial excuse, thereby unduly multiplying the number of visits. Some of these lodge doctors see forty patients a day, receiving therefor from $100 to $150 a month. It is no wonder, then, that the medical work done is, as a rule, of the most perfunctory sort. This fact is appreciated by the members of the societies, for often when fearing severe illness they will forsake their lodge doctor and consult some physician in whom they have greater confidence, feeling instinctively that the lodge doctor's service is worth what they pay for it. The outrageously poor quality of medical service, more than the cutting of prices, is the ground for the medical profession's discountenancing lodge practice.

Under workmen's compensation and compulsory industrial accident insurance, practically the whole of traumatic surgery is taken from the lodges; and if insurance against illness of workmen becomes a fact in this country, as it has in England and Germany, the *raison d'être* of most of these associations will have disappeared. England and Germany, however, instead of destroying these societies, have utilized those of them which are financially sound, and have in fact commisioned them to take care of accident and illness of members, but under strict governmental supervision.

Of late, in most of the large cities of America, people of small means have been exploited by lay organizers or promoters of so-called hospital associations. By cleverly worded advertisements promising first class medical and surgical service and hospital care often in a hospital chosen by the patient, memberships into the thousands have been built up. Since a large proportion of the dues collected is retained by the promoter as compensation for his labors in effecting the organization and for other reasons, the members of the medical profession of high standing and ideals are not attracted and the quality of medical and surgical service provided is necessarily poor. These so-called hospital societies or associations are considered by the better men in the medical profession as distinctly pernicious. Clinical records, if kept at all, are utterly inadequate. These hospital associations are at bottom little more than money-making schemes for the benefit of the promoters, and the laboring classes furnish a great majority of the victims.

Another evil foisted on the people of small means is the so-called Great American Fraud — the "patent medicine" evil. The victims are drawn mostly from the class of wage earners who buy the medicines not so much because of greater faith in such medicines than in the prescriptions of reputable physicians, but largely as a matter of the saving of doctors' bills. It is human nature to be more willing to pay for medicines which are things tangible than for professional advice.

Compulsory industrial accident insurance when properly administered will go far toward supplanting these organizations in the good they do. It will do it better and will be freer of harmful influence. If applied to sickness as well as accident, it will be a most potent check to the evils of "contract practice," "lodge practice," "hospital association practice," and the "patent medicine" evil, and will put a premium on better quality of medical and surgical practice.

THE CALIFORNIA LAW

The compulsory industrial accident insurance law of the state of California is known as the Workmen's Compensation, Insurance and Safety Act, passed in 1913 and effective Jan. 1, 1914, amended in 1915. The chief amendment of medical interest is in substituting for industrial accident the idea of injury in employment, whether accidental or not, and including industrial diseases.

It applies to all employees except in farm, ranch or dairy labor, domestic service and casual employment. It provides for an industrial accident commission of three who are charged with the enforcement of the law, and establishes a state compensation insurance fund administered by the commission. The proceedings of the commission are public records, and their hearings have the force of courts of law, but with a far less formal procedure. While their simplicity of procedure is scarcely to be approved by the lawyers, it is a boon to doctors who have suffered as witnesses from the law's delays and from hostile cross examination, from misunderstanding and misrepresentation.

The law requires full medical and surgical attention for injured wage earners for the first ninety days, and makes it obligatory on the insurance carrier to furnish such medical, surgical and hospital treatment, including nursing, medical and surgical supplies, crutches and apparatus, as may reasonably be required at the time of the injury and within ninety days thereafter, and longer at the option of the commission.

In most of the states the power of these commissions is very great, there being no appeal from their decisions except to the state supreme courts, and this is time consuming and expensive and hence not often worth while. Under such circumstances it is all important that the commissions should be constituted of broad minded men of unimpeachable integrity: men strong enough to be just in the face of criticism and free from political control.

California has been fortunate in the personnel of its first commission, which has been in office long enough to have established precedents which will be difficult later to neutralize. Its attitude toward the medical profession is that of high appreciation, as is attested by its selection for medical director of a prominent physician who has the confidence and respect of the entire profession.

The following paragraphs from reports of the California Industrial Accident Commission, for the fiscal year ending June 30, 1915, indicate the excellent relations of the commission and the physicians of the state, and it is interesting to note the appreciation on

the part of the commission of the possibilities as to the improvement in surgery that may be expected to result from the administration of the law.[1]

The commission has obtained the services of ninety physicians prominent in their several specialties, in different parts of the state. To these (medical referees) it looks for assistance in arriving at a just estimate of the medical aspect of cases. The interest manifested by these men is most gratifying. They are cooperating perfectly with the commission.

No small part of the success of the law is due to this cooperation.

The industrial commission is forming its standard of surgical results required of the medical profession of California, principally upon the opinions of the medical referees. These standards are very high. The effect will be better surgery through the state, diminished permanent disabilities, and decreased indemnities. Mediocre and careless surgical work can no longer pass in industrial accident cases. The commission is always at hand closely to scrutinize each case.

It has been found by bitter experience that all physicians qualified by the laws of the state to practice surgery are not necessarily surgeons.

The commission is gathering an x-ray museum, in which, from present indications, there will shortly be a complete series of examples of all bone injuries. This, with the mass of literature accompanying the cases involved, will eventually be of inestimable value for research, for treatment and for decisions of the commission. A medical library of reference and a museum of many interesting specimens procured from accident cases are in progress of development.

Through the state, the attitude of the medical profession toward the Workmen's Compensation Insurance and Safety Act, and the Industrial Accident Commission has shown a very noticeable and gratifying improvement. It may be said that understanding and cooperation are now universal. The profession realizes that while the act is doing good to the working people it also does good to the whole state. It realizes that the medical profession likewise shares in its benefits.

Of the many influences at work at the present time tending to improve the quality of surgical practice in this country, the most important and most fundamentally effective is, of course, the general betterment of medical education resulting from the development of medical schools on a university basis and under university control. Workmen's compensation and industrial insurance, however, is not to be despised in this regard. It must inevitably exert a powerful influence for better surgery over the whole country.

Already in California the insurance carriers are beginning to realize that it is poor economy to employ physicians and surgeons merely because they happen to be cheap. They are beginning to realize that true economy lies in the policy of employing such men as will insure a high quality of service. The poorly equipped and poorly prepared surgeon is in a fair way to being eliminated or, at least, to be relegated to the practice of surgery among the well-to-do who have to look out for themselves.

Except through public opinion, which is a very lenient critic, slow of action, short of memory, and prone to be hoodwinked by the plausible, and through the hated malpractice suit, which, in a great majority of cases, is entirely pernicious, the work of the surgeon is seldom subject to review. Industrial accident insurance, by making it to the pecuniary interest of those responsible for the choice of a surgeon in accident cases to provide the best available surgical services, will furnish a practical incentive for following up the work of the surgeon and inquiring into the causes of poor results. The purse of the insurance carrier will be sensitive to a continued harvest of avoidable deformity and continued disability.

As a rule, the men who are doing good clinical work welcome such review and naturally those who do poor clinical work may be expected to resent it.

Moreover, it cannot be otherwise than that the industrial accident commission would be interested in learning from which men in a given community continues to emanate the larger stream of poor surgical results.

When it sends a case the rounds of the referees for determination of the nature of the original injury and the causes of the persistence of disability, the commission is apt to be impressed with the fact, too often evident, that the records of the earlier examinations are so imperfect as to make the determination of the original injury impossible. The medical director of the California commission is looking into the possibility of requiring records to be taken on prescribed forms. Through the state compensation fund, which the commission administers, the commission has it quite within its power to insist on such records being kept, and this will have a decidedly stimulating effect in favor of practitioners keeping intelligible records. Records to be intelligible must, of course, be based on careful examination of clinical phenomena. The commission has already practically insisted on roentgenograms being taken in the early stages of all cases presenting any suspicion of fracture or joint injury. It ought, likewise, to insist on a temperature chart being kept of all cases with inflammatory complications, as well as blood count and examination of the urine. The insurance carriers are so much impressed with the prevalence of syphilis that they have inaugurated a veritable boom in Wassermann reactions. They are eager to show that syphilis, if present, is to blame rather than the accident. The attitude of the commission is that if an accident has occurred in a syphilitic the case is compensable to the degree in which the syphilitic lesion is aggravated by the accident — or where syphilitic complications follow an injury and extend the period of disability very greatly beyond what would be normal with such person in the absence of such syphilitic condition, the case is not compensable for such extended disability. These points are not always easy of determination. Moreover, it is recognized that the Wassermann reaction is not infallible.

Diagnosis or mere expression of opinion unsupported by clear description of clinical findings on which diagnosis is based is not sufficient for the purposes of the commission, and the insurance carrier cannot afford to employ in important cases surgeons who do not keep reasonably clear records.

In the beginning of this movement of industrial accident insurance in this country, insurance adjusters anxious to make records of economy commonly employed men as surgeons on the basis of cheapness, instead of quality; and it would seem that the margin of profit must be pretty large in the great numbers of minor cases when one considers the heavy indemnities many of the companies have had to pay in consequence of poor surgical work in cases of severe injury. An encouraging sign in this direction is that a number of companies engaged in this sort of business in California have been forced to retire from the field partly because of the enthusiasm of their adjusters for cheap surgery. It thus happens that the industrial accident

1. Annual report, 1914-1915, p. 24.

insurance fund in California is doing a larger business than any other insurance carrier, although the scale of premiums is the same. It is more liberal with the medical practitioners, and through its medical director it keeps sharp watch on the quality of surgical work done in its cases and makes quality the criterion of future employment. It is learning very rapidly which men in all parts of the state are doing the good work in these cases, and which are doing the poor work.

It is difficult to arrive at an accurate estimate of the amount of money paid the medical profession for services in industrial accident cases, but the commission estimates that in 1914 there were 62,211 industrial accidents in California necessitating medical treatment. Compensation was paid injured employees in the amount of $1,131,630, and for medical services (including hospital charges) $730,178. In other words, of the total money paid out by employers and insurance carriers on account of industrial accident, excluding expenses of administration, 60 per cent. was paid to the injured workmen and 40 per cent. for surgical and hospital services; but figures are not available permitting the separation of the surgical from the hospital charges.

The California commission, in cooperation with the insurance carriers, has established a fee bill for surgical services based on the average earning power of the employees but is confessedly a tentative arrangement. In general, it provides a fee of $1.50 for a visit at house or hospital, and 1 dollar for an office visit, with a scale for typical operations, varying from $5 to $75, assisting at operations from $5 to $10, administering a general anesthetic $5, and testimony before the commission as to fact of injury $10. Nothing is more difficult equitably to adjust than a professional fee bill under any circumstances, and such a fee bill based on a set fee for a visit is apt to be taken advantage of in unduly increasing the number of visits; yet, on the other hand, it conduces to insuring that the visits will be made and thereby possible neglect of the patient avoided. At times, however, it goes too far for decency, as in a case of fracture of the patella by direct violence with little displacement, in which the surgeon made two visits a day for weeks, and one visit a day for six months, his itemized bill reaching from ceiling to floor. In such cases and in case of dispute, all medical and hospital bills are passed on by the medical director of the accident commission, and finally by the commission itself. On the other hand, when an overenthusiastic insurance adjuster shows a tendency to browbeat a medical man into accepting a ridiculously small fee for competent work, the physician can have the matter reviewed by the medical director of the commission, who will see to it that an equitable adjustment is made; for example, the fee bill provides a fee of $10 for nonoperative first dressing of a fractured patella. In one case the adjuster tried to make a physician who had successfully performed a necessary open operation on a complicated comminuted fracture of the patella accept a fee of $15. The facts being made known, the medical director saw to it that the insurance carrier paid several times that fee, reckoning it as a major operation.

While the foregoing fee schedule is low, it was consciously adopted as a minimum schedule applicable to average cases. The commission has established the practice of approving bills for larger amounts for cases presenting features of unusual gravity or requiring unusual skill.

For example, the schedule fee for setting a fractured femur or humerus is $25. The commission has approved a bill for transplantation of bone for nonunion in the amount of $150 for the operation alone. For fractured tibia the fee of $10 is increased to $30 if operation of plating is done. The fee for operative refracture of bone for malunion has been approved at four times that provided in the schedule for the primary setting of the fracture.

The fear expressed by medical men when asked to accept this schedule, that if accepted it would be used in courts of law as a precedent and applied to cases in private practice, seems not to have materialized.

In most of the states the state industrial accident commission or board has no jurisdiction over the employees of corporations engaged in interstate commerce except in some states where, if the distinction between interstate and intrastate commerce can be clearly made out, the commission has jurisdiction over the employees of such corporations who are shown to have been engaged in intrastate commerce when injured. These corporations, nearly all large employers of labor, are keen to take advantage of this exemption for the reason that thereby they avoid paying compensation to injured or maimed employees. It is estimated (Pillsbury) that not more than 12 or 15 per cent. of employees of railroads engaged in interstate commerce come under the jurisdiction of the state industrial accident commission, and that at most only 25 per cent. receive compensation at all comparable to that received by all other workmen in the state, except in agriculture and domestic service, which are specifically exempted in the law. In other words, 75 per cent. of injured railroad employees receive no compensation for temporary or permanent disability beyond medical and hospital care. In case of accident to a railroad employee, it is often difficult to determine whether the man was at the time employed on interstate or intrastate commerce — his duties might change in this regard within an hour. In fact, in most cases it can be determined only by an actual trial with hearing of witnesses, etc.

Employees engaged in interstate commerce are under the federal law of 1907-1908 (extended by amendment), which is based on fault, and receive no compensation for disability except where negligence can be proved. On the other hand, railroads commonly continue the wages of their employees during temporary disability, and maintain a system of pensions for continuous service. They also exercise the opportunity afforded by the diversity of employments required by their business of placing maimed employees in position in which their deformities are not disabling.

These corporations, as a rule, maintain their own hospitals and corps of surgeons, in some instances making generous contribution to the funds contributed by the employees, and giving the employees a voice in the election of the surgical staff. The surgical service, however, is not subject to review, as is the case with workmen under state industrial accident insurance; but railway surgeons have the great advantage of being able to take their serious cases to central hospitals where efficient service may be given.

Osteopathy has not been recognized by the industrial accident commission of California except under certain circumstances. At the present time, the law

of California provides for representation of osteopathy on the state board of medical examiners, but osteopathists are not permitted to perform major operations, or to give anesthetics.

The common law right of an injured employee to sue his employer in the civil courts is abrogated by the compensation law in most of the states except in case of the grossest negligence. This results practically in barring suits for damages; but the publicity given unfortunate results by the practice of the commission and the insurance carriers of sending the patient from one surgeon to another in the hope of finding some one who can remove the deformity and disability and thereby lessen the indemnity, entailing as it does necessarily criticism of the incompetent surgical work which may have been the cause of the failure to prevent deformity and disability, is very apt to engender malpractice suits. Again, the commission sometimes asks a surgeon witness whether if proper competent surgical attention had been given in the beginning of a case the disability might have been avoided. Occasionally this question must be answered in the affirmative, and record is made of the question and answer.

Thus far, I believe, only three suits for malpractice have occurred in industrial accident cases in California in the two years and a half since the law went into effect, and I am informed that all these cases are without merit and are not based on criticism of the attending surgeon made by medical referees or in the office of the commission. In fact, the commission in California deprecates malpractice suits and does all in its power to forestall them.

In event of suit, however, against a surgeon whose professional fee for service rendered in an industrial accident case paid by the insurance carrier, it is not to be expected that the insurance carrier will assume the defense of the surgeon except in the unusual case in which the surgeon has a contract with the insurance carrier covering the point; for the surgeon who is requested to take charge of a case surgically is otherwise an independent contractor.

A most important judicial decision in the matter of malpractice suits in industrial accident cases was made by the Washington Supreme Court (No. 12747) so recently as February last, in *Ross* vs. *Erickson Construction Company*, in which the adverse decision of the trial court was reversed and the case remanded with instructions to dismiss on the ground that the legislature in passing the industrial accident insurance law had removed the physician as well as the employer from the litigious class, provided that the physician is regularly licensed to practice, but this decision is based on the peculiar provision of the Washington statute by which industrial accident insurance is substituted for all other forms of redress in such cases. On the other hand, in recent decisions in Minnesota, Wisconsin and Kansas the court has held that the physician is liable for malpractice in cases under industrial accident insurance as in other cases.

The attitude of organized labor to industrial accident insurance is difficult to understand. In fact, it has not yet taken shape and been finally formulated. I am informed by men close to leaders of labor organizations that organized labor is not altogether pleased with the law of California. A fundamental objection is made that the law is in effect paternalistic, and there is nothing which labor leaders take greater exception to than government paternalism. They feel that the individual workman should have the choice of his physician and surgeon, as if the freedom of choice were a more precious possession than a well qualified surgeon. In final analysis this freedom of choice of surgeon is apt to take the form of a labor union electing its own surgeon who is employed on contract and paid so much per capita of the membership or on salary. In either event he is elected by the union and will therefore be chosen rather as a compliment to his political acumen than to his professional attainment.

It is the idea and practice of the lodge doctor over again, and in no real sense does it establish the principle of free choice of the individual.

On other grounds it is very doubtful if free choice of physician or surgeon on the part of the injured individual would be a wise thing to provide. The principle is in force in Switzerland, to be sure, but when tried in France it was found that through collusion or what not the cost of professional services unduly increased and the amount paid in indemnities trebled.

The industrial accident commission of California maintains a small but active force of safety engineers through which, and by other means, it has done much to lessen the number of accidents and notably the number of deaths from accident. In 1915, there were more than 60,000 workmen injured and 533 killed in industrial accidents, a reduction in number of deaths of 22 per cent. of the number reported in 1914, because of better conditions of labor, safety appliances and safety methods. The largest percentage reduction was in transportation and public utilities, while in service (employees of men in the professions, in hotel service, restaurants, domestic servants, amusement employees, etc.), where, because of diversity of employments, safety appliances and methods cannot so readily be applied and which have not come under jurisdiction of the safety engineers, there has been a slight relative increase.

The laws of the various states are not perfect; they are not even uniform. They will have to be modified in numerous particulars, and it behooves the medical profession to study into the question individually and in committee in order intelligently to influence legislation to the end that the real interests of the laboring people be served from the standpoint of quality of surgical service provided, and that no injustice be done the medical profession.

There are many practical questions to be decided, among others the adjustment of the relations of hospitals and dispensaries to the movement. By taking the great mass of laboring people out of the category of the recipients of charity, a great burden will be lifted from many struggling hospitals and dispensaries.

On the other hand, just as private cases often may be best-worked out by groups of associated physicians, so these industrial accident cases and, when health insurance comes, cases of illness in the laboring classes may be economically and efficiently handled by dispensaries, of which the better clinics maintained by medical schools may be taken as the type. It would be greatly to the advantage of the patients to be utilized for teaching purposes, and practically few of them would seriously object, for it is widely known that in teaching hospitals and clinics the patients receive the most thorough study.

Endowed hospitals and dispensaries caring for industrial accident cases will derive a considerable income from them, and the disposition of funds so created may become matters of controversy. It would

appear that the surplus of such funds should be devoted to the betterment of the hospital or dispensary service concerned, including payment of something in the way of salaries to the professional personnel.

Taking these cases out of the category of charity patients will tend to the creation of private dispensaries and even hospitals, as has occurred in California. There is no fundamental objection to hospitals and dispensaries being established for the purpose of caring for these cases if they are under the supervision and regulation of the accident or health commission in such wise as to guarantee a high quality of professional service.

CONCLUSION

I would repeat that social insurance against industrial accident constitutes a great world movement. Already in force in thirty-one states in America, it is sure to be adopted in the remaining seventeen and to be followed by insurance of the working classes against illness. The idea has come to stay and must be seriously reckoned with by the medical profession. If the medical profession accepts it in a proper spirit and accommodates itself to it, there is sure to result not only immeasurable good to the working classes, but also much good in the direction of improvement in the practice of surgery and in the practice of medicine as well.

HEALTH INSURANCE IN ITS RELATION TO PUBLIC HEALTH*

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It is not an easy matter to condense within a fifteen minute paper the entire comprehensive subject of compulsory health insurance, but perhaps such an effort is at present unnecessary. So much has been said and written on the subject within the last few months that some familiarity with the subject may be expected from members of the medical profession. The valuable work done within the last year or two by the Public Health Service and the splendid reports of your Judicial Council, of which the first was presented about a year ago and the second one is to be made available to the medical profession in the very near future, have paved the way at least for a general understanding of the problem by American physicians. It seems sufficient, therefore, to present the entire subject at this time in a concise and somewhat schematic manner, bringing forth for special emphasis three or four specific problems somewhat less understood.

Insurance is primarily a process of distribution and not of production. In the language of a technical definition, "Insurance is a provision made by a group of persons, each singly in danger of some loss, the incidence of which cannot be foreseen, that when such loss shall occur to any of them it shall be distributed over the whole group." The decisive feature of insurance is, therefore, a financial one—the restitution of the losses to the individual, the spreading of the losses over a group.

Health insurance, to use the term which has become popular during the last six months, or sickness insurance, as it is perhaps somewhat more logically known on the European continent, deals with the economic losses incurred because of disease. These losses, at least as they are apparent on the surface, are twofold. First, the loss of earnings due to disability produced by sickness, and second, additional expenses incurred through sickness, which are largely expenses for the purpose of achieving recovery, such as the cost of medical or surgical aid, drugs or special supplies, hospital attendance, special care and nursing. It is generally known that health insurance, like many other forms of insurance, may be bought from commercial insurance companies in the open market, or obtained through membership in a large variety of mutual benefit organizations.

The type of health insurance actively discussed throughout the country at present is known as "social health insurance." The term "social insurance" introduces a somewhat abstract concert concerning which there is as yet no absolute agreement as to definition and content. It is interpreted by many as equivalent to state insurance, but this is not justified by European experience if state insurance is to mean what the term seems to indicate—an insurance mechanism created and administered entirely by the state authority through its own officers and backed up by state funds. Rather does the term "social" describe a certain attitude of organized society to the proposed system, an attitude of cooperation, control, financial and administrative assistance and perhaps compulsion.

The need for social insurance in this country has already been indicated in several chapters of my book on "Social Insurance" published about three years ago. Specifically the need of health insurance in this country has been treated very completely and with a great wealth of detail in a recent bulletin of the Public Health Service, prepared by Dr. B. S. Warren and Mr. Sydenstricker. It will be noticed, even by the casual reader of this report, that special emphasis is laid on the need of the wageworking class. The argument must necessarily be built on certain distinct features in the economic status of the wage worker:

1. That the working class is, in the point of earnings, on the lowest rung of the economic ladder.

2. That the working class shows a very much larger rate of sickness than other social groups, both as a result of general conditions of living as well as in consequence of specific hazards to health which every kind of wage work creates. And both these are factors with which no one group of society is more familiar than the medical profession.

Of course, neither of these conditions is absolutely limited to the wage working class. There are other social groups whose general economic conditions are not much more favorable, as for instance the lower strata of the farming class, especially in the Southern states, and there are many thousands of self employed persons in industry as well as commerce whose need of health insurance is equally great. From the point of view of need, therefore, the limitation of social insurance to the wage worker cannot be justified. The very fact that the older term "workingmen's insurance" has given way to the broader, more comprehensive, even though more abstract term "social insurance" is an indication that, at least theoretically, such a limitation is not desirable. It is for another reason that, notwithstanding this change in terminology, social insurance remains largely workingmen's insurance. Thirty years of practical experience in Europe have proved that the field of usefulness of social insurance must remain very limited until the element of compulsion is introduced, and compulsion is extremely

* Read before the Section on Preventive Medicine and Public Health at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

difficult to apply to the economically unattached individual. The wage or salary contract offers a very convenient method for exercising compulsion, not only on the wage worker himself, but, what is equally important, on his employer. While compulsory health insurance for these reasons must necessarily be limited to wage workers or salaried persons, voluntary health insurance may be encouraged with advantage among other social groups.

That an immense amount of good must come from the payment of cash benefits to men unable to work because of sickness should be self-evident to the medical profession. Charity workers and other social workers are almost unanimous in their assertion that sickness is responsible for the greatest proportion of destitution with which they are called on to deal professionally. Collectively, physicians see even a larger amount of human distress caused by illness since their observation is not limited to the more extreme cases which become objects of charitable relief; for the average respectable workingman's family will go a long way, depriving itself of everything above the barest necessities, before applying for charitable aid.

And yet, if this relief of distress through money benefits constituted the entire purpose of health insurance, as it does with most commercial insurance, it would not be a matter in which the medical profession, as a profession, would be very directly concerned. For it cannot be said that the solution of the economic problems devolves upon it. The proper organization of medical aid, however, *is* a problem for the physician because of the possible effect of health insurance on the health of those insured, and through them on the health of the community at large. Even the duty of the individual physician to his patient is not yet fully complied with when the diagnosis is made and the necessary course of treatment outlined. The physician cannot complacently close his eyes to the conditions under which his patient lives and the extent to which he is physically able to comply with the advice given. The development of medical social service is an indication that the medical profession is gradually learning to appreciate its broader duties in this matter. But still broader are the obligations of the collective medical profession to the nation at large in the matter of preservation of public health. If the advocates of health and other forms of social insurance feel at liberty to call on the busy medical profession for their cooperation and support, it is only because of the conviction that every comprehensive social measure for improvement of the general health conditions and prevention of unnecessary suffering and disease will find a ready response in the American medical profession. The existence of this section of public health is one of the many evidences to that effect.

What basis is there for the claim that compulsory health insurance is going to have the effect of preventing sickness and generally improving health conditions? Often by enthusiastic proselytes it is taken for granted, or at least a convincing precedent is found in accident compensation. It is pointed out that the "safety first" movement resulting from compensation legislation must be paralleled by a "health first" movement in consequence of health insurance laws. Yet catchy slogans, though often useful in a way, do not result in substantial changes of social conditions. It is argued that all these desirable results will be accomplished by the economic motive to reduce the cost of health insurance, as the "safety first" movement was stimulated by the cost of compensation. That undoubtedly is a substantial force, but its strength may be exaggerated. The cost of compensation for industrial accidents was felt in various European countries for ten, twenty or thirty years, but the number of industrial accidents shows little tendency to abate. It is true that in Germany and Great Britain the number of fatal and serious accidents is showing a substantial decrease and that in this country, while sufficient time has not yet elapsed to judge of the result, a very energetic safety campaign has been inaugurated which should, as far as we can foresee, produce some effect.

But it is important to remember that the preventive effect of the economic motive does not work itself out automatically. The prevention of industrial accidents requires very painstaking efforts of the safety engineer. The prevention of excessive illness will more than anything tax the expert in industrial and public hygiene. Let us review more or less systematically the various ways in which health insurance may accomplish its preventive work. In this way the best conditions for realizing the preventive effect may be determined and the medical profession may render a service of great value in insisting that such conditions shall be established:

1. The health preserving effect of the money benefit. The effect of the money benefit is evidently not limited to relieving misery and destitution for the time being. It is even more important in giving a better chance for recovery. It needs no demonstration that recovery from any illness must be seriously interfered with by insufficient food or fuel or by the mental worry over financial difficulties. It is an aspect of the problem with which every physician practicing among the poor must be thoroughly familiar, and it is unnecessary to dwell on it at length. But in order that this effect shall be fully realized, the benefit must be substantial. A small amount, perhaps uniform for all (as for instance the bare $5 a week given by most trade union funds at present out of which even medical care must be purchased) will not be sufficient. The medical profession, therefore, as the warden of the public health, has a direct interest in seeing that these benefits be made substantial so as to cover the cost of the necessities at least.

2. Equally important for its curative effect and the prevention of relapses is the opportunity gained to stay away from work when in the physician's opinion rest is necessary. This may be largely nullified by too rigid an interpretation of the concept "inability to work." A careful study of the workings of the British health insurance system, made by the Special Departmental Committee on Sickness Benefit Claims, disclosed a very serious problem in this respect. The friendly societies too often assume that the right to the benefits accrues only as a result of absolute "inability to perform any work." Even waving aside the somewhat facetious criticism that a woman sick in bed might still be knitting and therefore not be totally incapable of work, it still remains true that a large proportion of ill persons are not physically incapable of working, who, in accordance with reasonable requirements of medical science, should not work. Hundreds of illustrations might be cited, but before a professional audience they seem to be altogether unnecessary. The administrative officers of societies violently object to granting sick benefits simply because, in the opinion of the physician, the insured employee would profit by a prolonged rest. That there is room

there for abuse and malingering may be readily admitted, but nevertheless the ever present possibilities of abuse must not stand in the way of social legislation. The preventive effect of health insurance cannot fully be realized until it is understood that not merely physical disability but medical inadvisability, certified by a responsible medical officer, and subject to rule of reason and review, should be the basis of the sick benefit. It has been charged against British practitioners under the law, for instance, that they have improperly certified a large number of female employees simply for anemia and debility. Such liberality is found dangerous because the British system is based on an iron-clad level of premiums and the cost must be kept within the level; but from a point of view of public health it is very much more important that thousands of young women, the mothers of the future generation, suffering from anemia and debility, which in the final analysis means nothing but overwork and underfeeding, should be given a chance to recover even if the cost of insurance may be slightly increased thereby.

It is the failure to understand this difference between "disability" and "inadvisability to work" that causes many superficial critics to deny the preventive feature of sickness insurance in Germany. It is pointed out, for instance, that the health conditions of the workmen in Germany could not have improved because the average amount of sickness disability has increased. Thus in 1887 there were 778 sick days per hundred members of the Leipzig fund, and in 1913, 1,134 days. As a matter of fact, this simply indicates an increase in the days of inadvisability to work, or in other words, a very much improved care of the sick. Very much more significant is the decline in mortality among the insured members from 9.38 per thousand from 1889 to 1893, to 7.66 per thousand from 1909 to 1913, or a decline of nearly 20 per cent. in twenty years.

3. It is quite obvious that the greatest possibility for prevention, or at least for health conservation, lies in the proper organization of medical aid. The two terms "sickness prevention" and "health conservation" are not necessarily synonymous. Barring the stamping out of certain infectious diseases, the time is indeed far distant when people will cease taking sick; but once having fallen sick they can and should recover much sooner and more thoroughly than they do now. Even in industrial accidents, thirty years of preventive work in Germany were much more efficient in shortening the periods of disability, and reducing fatalities and grave injuries, than in reducing the total number of accidental injuries.

But the effectiveness of medical aid depends very largely on the thoroughness of provisions concerning it. From a purely financial or insurance point of view, the reimbursement of the additional cost required for medical advice, or the saving of expense by furnishing the same quality of medical aid which the sick workman would have purchased, is all that is necessary. Applying the same reasons, nothing need be done in cases in which the patient could have received medical aid free or in which he would not have been likely to call for medical aid, because in insurance practice where there has been no financial loss there should be no compensation.

From the point of view of public health, such a narrow interpretation would have been most unfortunate. If the medical profession is the guardian of the public health, it must be vitally interested in the proper organization of medical aid under the health insurance law. It is obvious that since such a law undertakes to furnish medical aid to millions of people, a new wholesale purchaser of medical services appears in the place of many individual purchasers and that this must profoundly influence the economic and social status of the medical profession. This is an important problem of itself, and the Social Insurance Committee of the American Medical Association, which I have the honor to represent, has been organized for the explicit purpose of studying it; but I do not want to assume for a moment that the medical profession of the United States will approach the problems of medical aid under health insurance simply from the point of view of their own financial interest. Leaving these financial problems aside at present, I want to discuss at this time the broad problem of the social possibility of proper organization of medical aid.

It is well known that a good deal of sickness among the wage workers at present remains unattended in this country. The conclusions of the Rochester sickness survey made by the Metropolitan Health Insurance Company point at some 40 per cent. The profession undoubtedly knows that the medical aid available to the work is not only quantitatively insufficient but also qualitatively inefficient. As Dr. Lambert tersely puts it, a great deal more team work is needed than is at present within the reach of the working man.

A system of medical aid which fails to provide for such team work, which interferes with any degree of medical organization, either because of considerations of economy or because of conservative clinging to old standards; in other words, a system which leaves the quality of medical aid where it has been before the introduction of health insurance, will utterly fail to make health insurance a powerful fulcrum for lifting general health conditions. This is just what happened in England, as compared with a much more effective system of medical aid in Germany and other countries. Whether medical aid under health insurance will accomplish all that it is capable of depends on such details as availability of consultant and specialist; arrangements for hospital care; additional care for convalescents, and a liberal provision for drugs, appliances, etc.

Even the financial arrangements for remuneration of physicians may have a grave influence for evil or good. I think it may be frankly admitted, whatever the economic interests of the medical profession may be, that a capitation system of payment, so much per head per annum, no matter whether small or large, has in it inherent tendencies for slipshod careless medical work, and neglect of those patients who need medical aid more frequently.

4. The broader content of the term "social insurance" as compared with "workingmen's insurance" has already been referred to, and several interpretations have been given. Within the working class itself, such an extension of the concept is possible when, in addition to the wage worker himself, his wife and children are included. This question has already been raised in New York. The American Association for Labor Legislation, through its Social Insurance Committee, has recommended this extension of health insurance, and I take a particular pride in having helped to bring this about. But later, when the Mills

Bill, or its equivalent, was introduced in several legislatures, this feature was excluded for fear that the employers would object to any effort to saddle on industry part of the cost of medical aid to the members of the workingman's family. Whatever the economic validity of this objection—and this is no place to go into a detailed discussion of theories of wages—from a point of view of public health it is a very unfortunate limitation of the efficiency of health insurance. The permanent improvement in health conditions of our people must largely come through organized care for the health of the children and the mothers of those children, present and prospective. If both the mothers and children be disregarded, no amount of medical care for the man alone can accomplish any far-reaching result. No one is in a better position to insist on the necessity of extending medical aid to the members of the family than is the medical profession.

5. There is another disputed aspect or branch of health insurance to which objections are raised on various economic considerations and which finds its main support in its effect on public health, and that is maternity insurance. Though the problem of the wage working mother is not as grave in this country as it is in Europe, it is a real and growing one; and even though the circumstances under which women of our wage working class exercise their highest social function of motherhood are not as horrible as those described in a recent English book as typical of the English working women, nevertheless there is much room for improvement, as physicians well know, in maternity care and care of new-born infants. The same abstract consideration is advanced against maternity insurance, that it might encourage the flux of woman into wage labor; but against this there are the very real facts that 100,000 infants die annually in this country under the age of 1 and a good many of them in the very early months of life, because of lack of efficient medical aid and mother's care. There is also the real fact that annually 15,000 women lose their lives in childbirth, largely as a result of inefficient obstetric aid. And as to how much chronic illness of the working woman is due to failure to take the necessary rest after childbirth, only guesses are possible. The medical profession can render an inestimable service by drawing attention to the great necessity of liberal maternity benefits from the point of view of public health.

6. It is a trite observation that before an evil can be officially combated its extent must at least approximately be known. Mortality statistics are the first necessary prerequisite to any scientific effort to reduce mortality. Sickness statistics are equally necessary in any systematic plan to improve health conditions. It is almost futile to secure satisfactory sickness statistics without sickness or health insurance, just as there is not a single country on record which developed satisfactory accident statistics before the advent of compensation. A striking illustration which recently came to my notice may here be quoted. The welfare officer of a very large corporation in the Middle West employing over 15,000 people consulted me in regard to the excessive sickness in their plant. Though any serious trade hazard was absent, the plant showed from 800 to 1,000 absentees a day on account of sickness, though the normal amount should not have exceeded 350. The point of the story is that this abnormal condition was never observed until the corporation had taken out a blanket health insurance policy with a private insurance company covering all its employees; and before three months had expired that company began to object to excessive losses under the policy.

Yet good sickness statistics are not an automatic result of health insurance. England has not yet produced them any more than it has produced any useful accident statistics after twenty years of compensation, nor will sickness statistics ever be perfected without the willing cooperation of the medical profession.

7. The various possible bearings of health insurance on public health have been enumerated here in order to dispel the idea that the preventive feature is automatic and inevitable. The indirect stimulus given by the economic motive to reduce cost need not be exaggerated, but it is real nevertheless. In compensation the entire cost is placed on the employer. It is the employer who feels the new economic pressure and is largely responsible for the "safety first" campaign. Under a proper health insurance scheme the burden of cost is distributed among employer, employee and the state. The economic force is therefore somewhat diffused. In order to retain its effect, democratic and local administration is absolutely necessary, notwithstanding the charges which recently became so popular that democratic administration spells administrative inefficiency. To revert to the illustration just given of the large corporation in the Middle West, further inquiry brought out the information that occupational hazards to health were few; that the plan was a model one, and the employers were deeply concerned in the welfare of their employees. But the excessive sickness was due to epidemics of typhoid, scarlet fever, measles and even mumps, due to conditions of the city sanitation over which the employer had little direct control. The remedy evidently lay in an improvement of general health conditions to be brought about through a political overthrow of the rotten political machine which ran the city. It was stated that it was difficult to wake up the wage workers, who constitute a majority of the voters, to the gravity of the situation. Were there a local health insurance fund in the city which would immediately feel the burden of excessive contributions because of the unusual amount of sickness, then the economic force would have been equally felt by both employers and employees, and it is reasonable to believe that the political problem would have been very much simplified.

Undoubtedly there are a good many other points of contact between the system of health insurance and the problem of public health. But enough perhaps has been said to indicate how carefully the interests of public hygiene must be safeguarded in the health insurance law, if those salutary and far reaching, but less obvious preventive results are to be accomplished. There is no social group that will contribute so much to this end, both through its expert knowledge and the weight of its authority, as the medical profession, for American society never refuses to listen to the collective voice of its medical profession on matters of public health.

It serves no useful purpose to close one's eyes to the real difficulties and take everything desirable for granted. The American wage working class has not yet been educated to the necessity of compulsory health insurance, and even those that have seen the light view it largely from the narrow point of view

of immediate financial aid. It is on the intelligent and willing cooperation of the medical profession, the natural warden of the health of the nation, that the achievement of these far reaching, if more remote, results very largely depends.

HEALTH INSURANCE

ITS RELATION TO THE NATIONAL HEALTH *

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The people of the United States are beginning to wake up to the fact that health is no longer a matter for individual concern alone, but is one for collective action on the part of all persons or groups of persons responsible for conditions affecting health. When this idea of the necessity for collective action is thoroughly understood, and it is realized that instead of weakening individual endeavor it will make the individual stronger by making him more economically independent, the American people are going to demand that the responsibility for disease-causing conditions be fixed and that this matter of sickness be provided for in a business-like way and no longer left to haphazard methods.

It was not so long ago that the matter of public schools was opposed on the grounds that the idea was too paternalistic in character and too antagonistic to American ideals and principles. Now the richest and highest in the social scale are sending their children to the public schools. The question of health is more a matter of public concern than the question of education.

Relation of the Federal Government to Health.—Health is not only a matter for state concern but one for federal consideration as well. It is not only a federal question under the "general welfare clauses" of the constitution, but also one under the "interstate commerce clause," since disease is not confined by state lines. The position of the federal government in matters of health is very generally recognized, as shown by the many statutes on the subject. The act approved Aug. 14, 1912, was most sweeping in character. It changed the name of the United States Public Health and Marine Hospital Service and gave it authority to study and investigate the diseases of man and conditions influencing their propagation and spread.

Health Insurance, the Next Step in Welfare Legislation.—The next step in social legislation will be a measure for intelligent relief and prevention of disease. All investigations into conditions influencing the propagation and spread of disease go to show that there are three principal groups mainly responsible for these conditions: 1. The individual, with the greatest share of responsibility. 2. The property owner and employer, with a somewhat less degree of responsibility. 3. The public, with a community responsibility. There are others who may be responsible; for example, the physician in his employment as family physician or company physician; but on the whole the three groups named are the ones which have by far the greatest financial responsibility. Health insurance should by all means include in its operation the responsible groups and properly coordinate the efforts of all agencies at work in this field.

At present those interested in remedial proposals are confining their effort to health insurance for industrial workers, and there are many reasons for believing that this will be the next big step in this field and that the day of this achievement is near at hand. Such expectation is encouraged by the fact that thirty-four states and territories have enacted workmen's compensation laws within the last few years, that measures for health insurance have been introduced into three state legislatures, that two states have created a commission to study social insurance, and that measures to create such commissions are pending in Congress and one state legislature.

The time is therefore at hand when all health agencies and health officials should study this subject of health insurance.

OUTLINE DESCRIPTION OF HEALTH INSURANCE

As stated above, the measures proposed include only insurance for industrial workers, and in this connection the groups with a financial interest are limited to the employee, employer and the public. As operated under governmental systems, the following provisions are usually made:

Membership.—All employed persons in certain occupations, and all persons in other occupations earning less than a specified annual income, shall be entitled in case of illness to certain benefits.

Benefits.—The benefits ordinarily provided are:

(*a*) Cash payment for a limited period (usually twenty-six weeks in any twelve months) of a proportion of the wage, or of a fixed sum, to employees, when disabled by sickness or nonindustrial accident (industrial accidents are provided for under workmen's compensation laws).

(*b*) Medical benefits, which include adequate medical and surgical care, medicines and appliances in home, hospital, sanatorium, or physician's office, to employees disabled on account of sickness or nonindustrial accident during a limited period (twenty-six weeks in any twelve months).

(*c*) Maternity benefits, which include cash payment of a small sum in case of confinements of employees or wives of employees.

(*d*) Cash payment for deaths of insured persons due to sickness or nonindustrial accidents of an amount calculated to cover funeral expenses.

Funds.—The funds are usually provided by payments from employees, employers and government appropriations. In Germany the employee pays two thirds, employer one third, and the government pays for certain expenses of supervision. Under the English national insurance act the employee pays four ninths, the employer three ninths, and Parliament appropriates two ninths. In the case of women and persons employed at certain low levels of wages, the payment of employer and Parliament are increased and the proportion paid by employee is decreased.

Administration.—The administration, both central and local, is usually according to some form of representative government. In the local government, in addition to governmental bodies created for the purpose, unions, industrial establishments and certain societies are utilized for purposes of the local administration of the funds.[1]

It would seem feasible under our form of government that such a system could be provided for interstate employees by federal law and for intrastate employees by state law.

To be adequate as a public health measure, a health insurance system should provide for:

* Read before the Section on Preventive Medicine and Public Health at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. This description is taken from the report of the Standing Committee of the Conference of State and Territorial Health Officers with the United States Public Health Service.

1. Adequate cash and medical benefits to all wage earners in times of sickness and death.

2. The distribution of the cost of sickness among the groups responsible for conditions causing disease, viz., the employer, the employee and the public.

3. The stimulation of the cooperative efforts for disease prevention on the part of the responsible groups named above and the linking of their efforts with existing health agencies.

4. The correlation of the work of all agencies working for the relief and prevention of disease.

Such a law, if enacted by the federal and state legislative bodies, would have two distinct relations to the national health.

As a Relief Measure.—By providing relief for all cases of sickness in this group it would have a decided effect in improving the health of the people.

As a Preventive Measure.—By fixing a definite price for each day lost on account of sickness and by providing a financial incentive to those paying this price to save it by preventing sickness, it would start a movement for preventing disease, just as certainly as the workmen's compensation laws have brought about the nation wide "safety first" movement. And properly coordinated with existing health agencies, the machinery would be already at hand for advising and directing this movement with respect to disease prevention.

RELATION TO HEALTH AS A RELIEF MEASURE

As a relief measure, adequate cash and medical benefits would be provided for all. It has been tentatively estimated that an assessment of 50 cents per employee per week would be ample to provide $1 per day cash benefits, $1 per day for medical benefits and for other necessary expenditures. An equitable division of this assessment would not require the worker to pay more than 25 cents per week. Such a small sum would place these benefits within the means of even the lowest paid workers. The fact is, a very considerable proportion are already paying more than this for what amounts to burial expenses. The law should provide that this amount be deducted from the pay roll each week so that the employee would always be in good standing and not suspended for nonpayment of dues, as often happens under voluntary systems. In this connection it should be remembered that the lowest paid workers are the very ones who are sick the most often and stand in greatest need of the system, and that if not deducted from the pay roll they are the ones least likely to keep their dues paid.

The cash benefit must be sufficient to enable the worker to stop work in order to avail himself of the medical benefits before his health is seriously impaired. At present, even in places where free medical service may be had, the worker, who is just earning a living, cannot afford to stop work for if he does, his wife and children would have to go hungry. Health insurance would tend to break this vicious circle of poverty causing disease and disease causing poverty.

Adequate Medical and Surgical Service.—Adequate medical and surgical relief would bring a service to all which is now only within the reach of the rich or of those who are willing to accept it as charity or as patients in teaching institutions. Furthermore, it is only in the larger centers that these facilities are usually found. Under adequate organization of a health insurance system not only would every workman be entitled to treatment in his home by the physician of his own choice, but hospital and dispensary units would be contracted with or otherwise procured in which scientific treatment of the highest character would be available. The insured persons would soon learn to use this improved medical service.

When, to this provision, the local administrations of the funds are so well perfected that a sufficient number of visiting nurses are provided and committees composed of insured persons are visiting every sick member, the effect on the sick rate will be such that we will wonder that we ever countenanced present methods.

RELATION TO HEALTH AS A PREVENTIVE MEASURE

As a preventive measure the health insurance system should bring to its aid all health authorities, national, state and local, and all volunteer agencies for the relief and prevention of disease.

Funds for Health Work.—It is worth while to outline here a plan which it is believed will make such a scheme possible. Before doing this one must realize that money is the one thing needed by all organizations and individuals engaged in efforts for the relief and prevention of sickness. Without money, or with money available only in small and varying amounts and coming at irregular intervals, the work is spasmodic and oftentimes discontinued for longer or shorter intervals. Furthermore, much of the time of the workers in this field is taken up with a hunt for contributions or lobbying for appropriations. Bearing this fact in mind and remembering that all of the money contributed by employee, employer and state is for the relief and prevention of sickness, some estimate may be made of the amount which will be paid into health insurance funds. There were approximately 30,000,000 wage earners in the United States in 1910 according to the census report of that year. At a rate of 50 cents per week for each one of these, the health insurance fund would amount to over three quarters of a billion dollars annually. Such a sum should eliminate the question of money from the problem and guarantee continuity to any reasonable plan of action.

Without going into all of the details of a health insurance system, it is only necessary to know that most plans provide that the employee pay from two fifths to two thirds of the funds, that the employer pay one third to one half of the funds, and that the state pay expenses of supervision or in some plans as much as one fifth of the funds.

Administration of Medical Benefits a Connecting Link with Other Health Agencies.—The administration as usually provided is central and local, with provision often made for federation of the local bodies. The central body is usually a commission made up of representatives of the groups contributing to the funds. This commission promulgates regulations, supervises local administration, and decides appeals.

The local administration as a rule utilizes business establishments, trade unions, fraternal societies and the like for local administrative purposes, but the exception is ordinarily made that there be at least one local body created of representatives of employees and employers. The latter body is usually called the "local fund," and accepts all workers to membership who are not members of some special fund. The provision is also usually made that no special fund be recognized until the solvency of at least one "local fund" is guaranteed.

In Germany these local bodies are called "carriers," and under the law administer all benefits. In England

these local bodies are called "approved societies," and administer all except the medical benefits. Under the English act the medical benefits are administered in each county or county borough by a governmental body or insurance committee composed of representatives of the approved societies, the community and the physician. The English law provides for free choice of physician by beneficiaries; the German law does not.

It is through the administration of the medical benefits that it is proposed to link up the systems with organizations for the relief and prevention of sickness. It is believed that this can be done along three lines: (1) by providing efficient staffs of medical officers in the federal and state health departments to carry into effect the regulations issued by the central governing boards or commissions; (2) by providing a fair and sufficient incentive for the active cooperation of the medical profession, and (3) by providing for a close cooperation of the health insurance system with state, municipal and local health departments and boards.

Corps of Full Time Medical Officers.—In view of the experience in both Europe and America, it would seem best to place the administration of the medical benefits directly under governmental agencies, and to insert a provision that no cash benefits be paid except on the certificate of medical officers of the national or state health departments acting as medical referees under the regulations of the central governing board or commission. Such medical officers should be selected according to civil service methods. Since these officers are the representatives of the health departments in the funds, their selection and appointment should also be based on their knowledge of preventive as well as of clinical medicine. After a probationary period of service satisfactory to the health administration, they should be given permanent appointments, subject to removal only for inefficiency or immoral conduct. One of their duties should be to examine each disabled beneficiary and keep themselves informed as to the progress of his recovery. It is needless to say that the referees should not be permitted to engage in private practice.

Free Choice of Registered Physicians.—With such a check on the payment of cash benefits, the medical and surgical treatment provided for beneficiaries could safely be left to the physician of the patient's choice, and payment made on a capitation basis regardless of whether the patient was sick or well, after the manner of the English national insurance act. This method of selection and payment of physicians for the medical and surgical relief would offer every incentive to them to keep their patients well and to endeavor to please by rendering their most efficient service.

Hospitals and Dispensaries.—In addition to the provision for home treatment by the physician of the patient's choice, provision should be made for hospital and dispensary treatment; and to this end, hospital and dispensary units should be established or contracted with, where the very best medical and surgical service would be available for all insured persons.

Value of Such Plan in Disease Prevention.—The greatest value of such a system of administration of the medical benefits would be in the splendid opportunity it would offer for preventing disease among the insured persons and their families, by the organized corps of medical officers, and the improved medical and surgical treatment. It would be through the corps of full time medical officers of the health department acting as referees that the health insurance system would be linked up with other health agencies. It is not necessary to relate here the advantages which would arise from the visits of such specially trained men into the homes of all sick persons, nor is it necessary to tell how these officers, acting as health officers, could further lower the sick rate. The objection could not be raised that such a corps would be too expensive. It would not require more than one such medical officer to approximately every 4,000 insured persons, and at that rate they could more than save their salaries by relieving insurance funds from paying unjust claims. Furthermore, while an estimate cannot be made of the amount to be saved by their efforts in the way of lowering the sick rate, it is safe to say that it would amount to many times more than the sum of their salaries.[2]

With such a system, funds would be provided and every existing health agency and newly created agencies could be utilized and fitted into their proper places and all work together without duplication of effort. Above all there would be a financial incentive given to each interested group to prevent sickness.

The employer who found that he was contributing more per employee per year than his competitor would doubtless inquire into the cause of the difference.

The employee who learned that his neighbor working in the same kind of trade was paying less dues than himself would also be very likely to inquire into the cause of the difference.

The doctor who found his patients were sick so much that he was not able to attend as many insured persons as his brother doctor would have a financial incentive to look into the cause of the difference and remove it.

The city or town which found that a neighboring city or town was providing adequate hospital and dispensary treatment for its insured persons, and not only obtaining more efficient diagnosis and treatment but obtaining it at a less cost, would doubtless establish similar institutions.

The state which found from the returns that its tax rate for sickness was in excess of a neighboring state would have reason for making this an issue in the next election.

The United States Public Health Service, when the reports, for example, showed a marked difference in the sick rate of an iron and steel town in Pennsylvania as compared with such a town in Alabama, would be very likely to order the responsible officers to Washington to explain the differences.

The final result would be that health would be placed on a competitive basis in the political and business worlds: this, too, after providing for the cooperation of all interested groups through the health insurance administration, so that all the agencies for the promotion of health would work in harmony, forming one complete health machine.

To provide a "health insurance system" simply as a relief measure without adequate preventive features would be a blunder; but enacted together with a comprehensive plan for the prevention of disease, there is every reason to believe that it would prove to be a measure of extraordinary value in improving the health and efficiency of the 30,000,000 wage earners in the United States.

2. This description of plan for administration of medical benefits is taken from the report of the Standing Committee of the Conference of State and Territorial Health Officers with the United States Public Health Service.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. RUBINOW AND WARREN

Dr. Alexander Lambert, New York: Make state officials the referees. The referee is then not considered as one of the medical corps. Because, just as soon as you make the man who decides whether a patient is sick also decide whether or not he shall go to work, you increase the expenses and put a possibility of undue influence between the patient and the physician which is human and cannot be ruled out. In England the panel doctor shoulders the burden of the decision as to whether or not a man shall go back to work, hence the law does not work without friction. In Germany nearly 31 to 41 per cent. of the questions that are sent to the referee either never come up to him for decision at all, for the patient goes to work, or else he sends them to work immediately.

How is the medical profession to be remunerated? All our medical service is a contract. The form of contract which is condemned is that which exploits the service of the physician by forcing him for inadequate pay to give neglectful, hurried service to his patients. Capitation has been the usual method of remuneration under these contracts.

In England there is not sufficient care for the seriously sick; there is not adequate provision for hospital care, and there is no proper provision for a second opinion from some person in consultation. Germany takes from 3 to 4 per cent. of the wages from the employee, and from the state whatever it costs to give adequate service. The English will not give eye-glasses or trusses to the sick when the price of either is not as much as the weekly wage they pay a man when he is on the sick funds. Germany, on the other hand, would spend $20 or $30 for an artificial limb to get a man back to work. Another form of capitation is pool capitation. Each service rendered is charged against a lump sum of money. At the end of the quarter the total number of points of service are divided into the total sum of money. The point is invariably less the more work you do; the less work you do the more you are paid.

Another method of capitation is to divide the total sum of money into (1) a special fund, which pays first for consultations and extra services, and (2) a regular fund to be paid out by regular capitation. Another method is to pay by attendance. The patients like it best because they get the best service that way. However, it does cost more and you cannot estimate the expense in advance so accurately as you can by capitation. There are three antagonistic groups in your health insurance law—the interests of the carrier, the workman, and the physician. The carriers must give a fair return to the physicians and justice and fairness to the wage earner in the matter of his sick claims. They, on the other hand, have a right to demand that the physicians shall give honest service, a willing and an adequate service up to any limit that medicine knows. Physicians, on the other hand, must agree that they will help the administration to blot out malingering and valetudinarianism. They must give a willing and an adequate service, or they must accept the inevitable control of the layman, who will force them to do it.

Dr. Eden V. Delphey, New York: There is no crying demand for compulsory health insurance by masses of the wage earners; in reality they are opposed to any such plan. Nor is the rank and file of the medical profession certain that they wish to merge their individuality into a part of a great machine—changing from an individualist to a socialist. The health insurance bills introduced into the legislatures of New York, New Jersey and Massachusetts are identical, word for word, and they have all failed of passage. At present in New York State the state fund is insuring employees under the workmen's compensation law at a much lower rate than are the casualty insurance companies.

In order to be acceptable to the medical profession every health insurance law should contain provisions arranging for: 1. Adequate representation on all boards having to do with medical matters. By adequate representation is meant an equal representation with the other parties to the contract; the representative should be a physician who has been in the habit of attending sick wage earners. 2. The formation of lists or panels containing the name of every legally qualified medical practitioner. 3. The sick insured wage earner shall have the right to choose a panel physician from any panel, subject only to the acceptance of the patient by the physician. 4. The insurance carrier shall make all contracts for medical attendance and treatment only with organizations composed of one or more panels in the insurance districts, to which organization or association every panel physician in that district must belong.

This prevents the insurance carrier from getting poor and needy physicians to compete unfairly with each other for these cases.

Other points to be observed are:

1. Impartial referees, appointed and paid by the state. The decisions of the referees may be appealed from to the council and commission.

2. Determination of the maximum number of patients which any one physician can properly attend and treat.

3. When less than all the persons earning under the specified amount per year are insured, the payment for medical services shall be by capitation. When less than the entire number of sick persons are to be insured, the insurance carriers will try to make the medical fee low on the ground that it is at least sure of collection.

4. Arrangement for treatment of the sick insured wage earners by specialists.

5. Determination of the status and relation of the panel physicians to the hospitals caring for the sick wage earners, whether they are to be created or now exist. We must consider it as purely a business proposition, and instead of trying to be purely altruistic, we must take care that the medical profession is properly compensated.

Dr. Benjamin S. Warren, Washington, D. C.: I believe that the medical referee will solve many of the problems of administration of medical benefits and bring together the medical profession, link them up with the health insurance system, and with the health departments. I want to emphasize the part health departments should play in a health insurance system. They should be called on to provide the disease-prevention machinery. I do not believe they realize the opportunity which a system of this kind offers to them. I understand health departments may be weak in some states and may be opposed by the health insurance system, and meet with a strong opposition in this regard, but that is no reason why they should be eliminated from the scheme. They have a definite place in this scheme and the corps of medical referees is the link which should coordinate health departments with health insurance systems. A medical referee will be a better referee if he represents an impartial body which has no financial interest in his decisions. If he represents the insurance fund, he would be employed by the funds, and would naturally have some leaning that way. Even if he should not have such a bias, the employee, or the claimant would presume he had. The fact is he could not be a referee if he represented one of the interested parties. I believe I am right in that. He should be employed by the state and the state should, in this instance, be the state health department. As to the capitation system of payment of physicians or the visit system payment, provision should be made for free choice of physicians. With the referee system as a check the medical treatment can safely be left to a physician chosen by the patient and payment made on a capitation basis without regard to whether the insured person was sick or well. Such a system of selection and payment would be an incentive to the doctor to please his patient and keep him well. Furthermore, the medical practitioner will be a check on the medical referee. This plan will avoid the defects found in the German and English systems. It might be of benefit to limit the number of patients who can select the same doctor. This has been proposed in the last draft of the model bill drawn by the Committee of the American Association for Labor Legislation. As to the attitude of labor on this question, I will admit that the president of the American Federation of Labor opposed the idea of compulsory health insurance, but he does not oppose the idea of voluntary health insurance at all. Furthermore, the Commission on Industrial Relations got out a report which four of its members signed: Mr. Garretson of

the Brotherhood of Railway Conductors; Mr. O'Connell and Mr. Lennon of the American Federation of Labor and the chairman, Mr. Walsh. The report recommended a health insurance system for all interstate employees. As to the effect on the individual, it is far from being socialistic. It is more like the public schools; it encourages individual effort and it promotes individual success by making the individual more economically independent and able to take care of other necessities of life. Furthermore, the workman will own these funds, they will be part his; he will be running them and their management will be democratic. The workman will be entitled to the benefits which will be in no way a charity.

DR. I. M. RUBINOW, New York: Dr. Delphey makes certain definite statements, as, for instance, that neither workmen, employers nor physicians want this thing.

As far as the relation of organized labor to health insurance is concerned, Dr. Warren has already answered it. I would also like to inform Dr. Delphey that after Mr. Holland, the chairman of the New York Federation of Labor, had opposed a bill at Albany on March 14, he was reprimanded very severely by the New York Central Labor Union for his attitude in the matter.

As to the attitude of employers, the National Association of Manufacturers a few weeks ago came out very strongly in favor of compulsory health insurance applied to all wage workers. And as far as the medical profession is concerned, the statement of President Blue yesterday, and official statements by the House of Delegates, place the medical profession, or at least that part of it represented in the American Medical Association, on record.

SOME BACTERIOLOGIC OBSERVATIONS ON EPIDEMIC POLIOMYELITIS

PRELIMINARY REPORT *

GEORGE MATHERS, M.D.
CHICAGO

During the past months poliomyelitis has been mildly epidemic in Chicago, and the relatively large number of fatal cases indicates that the current infection is highly virulent. In the work discussed briefly here the brain and cord were removed under sterile conditions as soon after death as possible, and cultures made immediately. Small pieces of tissue, which had been washed thoroughly, were macerated in sterile normal salt solution and the emulsion inoculated into various mediums, as, for example, ascites fluid and ascites dextrose agar containing a small piece of sterile rabbit kidney,[1] ascites dextrose broth, and coagulated normal horse serum, both aerobically and anaerobically. The cultures were incubated at 35 C. for from one to seven days.

In seven of the eight cases examined thus far bacterial growth developed in the aerobic ascites dextrose broth and agar cultures after eighteen hours, while in the anaerobic cultures a definite growth usually did not appear until after from three to seven days, and then often very scantily. In six of the seven instances a pure culture of a gram-positive micrococcus was obtained. In one instance the cultures gave also a gram-negative bacillus.

The coccus grows rapidly in aerobic ascites dextrose broth as a granular material along the side of the tube, gradually settling to the bottom as a white flocculent sediment. In the anaerobic cultures made according to the technic of Flexner and Noguchi growth is very slow; after from three to seven days there is a very small amount of sediment and some turbidity in the medium around the tissue. Morphologically the organism varies with the medium on which it is grown. In ascites dextrose broth it is gram-positive, arranged in pairs and short chains. In anaerobic culture it is variable in size, usually very small, gram-positive, arranged in pairs, clumps and chains, with an occasional large form among the minute bodies. On blood-agar plates the organism grows in small dry colonies, which produce a faint green halo and a slight degree of hemolysis. Cultures from the heart blood and from the cerebrospinal fluid after death thus far have not yielded this micrococcus but it has been obtained from the mesenteric lymph nodes.

The organism is of low virulence for rabbits but when injected intravenously in large doses lesions of the central nervous system are produced, with paralysis which may resemble that of infantile paralysis, especially as it affects the extremities. Intracerebral injection of the organism soon after isolation has produced paralysis in the monkey. The affinity for the central system in rabbits seems to disappear after the third or fourth transplant on artificial mediums. Subcultures from a single colony of the coccus have produced paralysis in rabbits within three days after intravenous injection.

Questions that arise, the filterability of the organism when grown in various mediums, immune reactions, and other cultural characteristics, are under investigation.

In view of the accepted facts in regard to the virus of epidemic poliomyelitis it would seem most reasonable to regard the micrococcus described as a secondary invader, but further work is necessary before its significance can be fully understood. The great interest in poliomyelitis at this time and the much greater amount of material now available for the study of the disease in many places other than Chicago are the reasons for this preliminary report.

* From the Memorial Institute for Infectious Diseases, Chicago.

1. Flexner and Noguchi, Jour. Exper. Med., 1913, xviii, 461.

A Simple Device for Locating Foreign Bodies in Fingers.—Location in a busy clothing manufacturing district gave rise to the necessity for a simple method of determining the presence and location of foreign bodies, such as needles and splinters, in fingers. A piece of black woolen cloth 8 inches square was fastened to a piece of adhesive plaster of equal size, and in the center an oval opening was made measuring five-eighths by one-half inch. By placing this over an electric light supplied with a reflector and placing the finger over the hole, excellent transillumination is obtained, and by making pressure with a pointed instrument over the suspected area, the object can be brought out more clearly. If the field is rendered bloodless while operating, the finger may be placed over the opening and the object can be again accurately located. This device is simple, inexpensive and indestructible. It is more easily adapted than pocket flashlights, etc., to the finger, and reduces to a minimum the number of cases requiring roentgenograms. Daily use for the past six months by several workers in the accident room has proved its efficiency.—ROSCOE C. WEBB, A.B., M.D., Assistant House Surgeon, New York Hospital, New York.

Double Impalement.—The *Medicina Contemporanea* of Lisbon reports that a man in a quarry was tamping the charge in a hole he had just drilled when a premature explosion drove the long wooden rod through his neck. As he was flung up in the air, the rod broke and the other half transfixed him also, through the chest. The hemorrhage was slight and there was no subcutaneous emphysema or appreciable disturbances with breathing; the arms showed no signs of vascular or nervous trouble, and in three months the man was dismissed from the hospital. The wood was sawed off close to the skin and the rods were pulled out from the front.

Therapeutics

THE TREATMENT OF DIABETES

DEFINITION

Diabetes has been defined as a "specific deficiency of the power of assimilating food."[1] The generally accepted view, based on experimental evidence, refers the deficiency to a diminished functional capacity of the pancreatic islets. A person with a normally functionating pancreas may ingest a quantity of food considerably in excess of his energy requirement and completely assimilate all that is digested and absorbed, even though the greater part of the food may be carbohydrate. An average adult, performing light work, will ingest and metabolize from 300 to 500 gm. of carbohydrate a day. With impaired pancreatic function, the organism becomes incapable of assimilating even such quantities of carbohydrate as are contained in a general mixed diet, that is to say, a diet sufficient to cover the energy requirement in which from one half to two thirds of the total caloric intake is in the form of carbohydrate.

When there is a deficiency of the power to assimilate carbohydrates, glucose accumulates in the blood; and when the concentration reaches a certain limit, the excess of glucose overflows through the kidneys. Thus, *glycosuria constantly occurring in an individual, whose food intake is within the limits mentioned above, is evidence of diminished pancreatic function of the specific type here considered — it is evidence of diabetes.*[2]

If the food intake of a diabetic is diminished so as to come within his assimilative capacity, sugar excretion ceases. Absence of glycosuria is, therefore, not to be taken as evidence that diabetes is not present, unless the individual is on a full, mixed diet.[3]

In diabetes, there is a lowered functional capacity, not only for the assimilation of carbohydrate, but also for protein, since the latter food may yield a considerable amount of carbohydrate in the course of its metabolism.

When fat is added to the diet of a diabetic, glycosuria may occasionally occur, although it is very doubtful if fat itself is actually converted into carbohydrate. The glycosuria is to be considered rather as a result of stimulation of the metabolism. In diabetes the metabolism of fats is affected since, as Naunyn has expressed it, "fats burn in the fire of carbohydrates." With failure to assimilate carbohydrates the "fire" may be but a smoldering one, so that fats are incompletely burned with the formation of acetone, acetoacetic acid, and beta-oxybutyric acid. The latter two substances being acids, may, if produced in sufficient amounts, lead to a serious disturbance of the acid base equilibrium of the body known as *acidosis*. It is acidosis that is presumably the cause of diabetic coma.

OBJECT OF TREATMENT

The object of the treatment of diabetes is to supply a diet that can be metabolized and that will not overtax the weakened pancreatic function. Allen has aptly compared the functionally weak pancreas to a "weak" stomach. If the latter, with frequent rests, is supplied with food of such quality and such quantity as can be readily digested, it may functionate satisfactorily, and may even be able to digest larger and larger amounts of food, although it will never become a "strong" stomach. Continued dietary insults, on the other hand, would further weaken the organ. The same holds true for the functionally weakened pancreas; it may be able to provide for the assimilation of a certain amount of food, but if overwhelmed with an amount in excess of its capacity, a progressive diminution in capacity results. A weak stomach if overtaxed usually gives warning in discomfort; an overtaxed pancreas gives no such warning.

THE ALLEN TREATMENT

The diabetic who constantly indulges in food in excess of his assimilative capacity invariably becomes progressively worse; hence the conception has arisen that diabetes is characterized by an inherent downward tendency. As a matter of fact, practically every diabetic has some tolerance for food, and the tolerance is usually sufficient to allow for a great enough food intake to cover the basal energy requirements. With proper treatment, it is possible to maintain or even to increase this tolerance. This is the underlying principle of the modern treatment of diabetes as formulated by Dr. Frederick M. Allen.[4] On the basis of animal experiments and carefully controlled clinical observations, he has recently proposed a system for the treatment of diabetes that incorporates those features of the older methods that are of proved value, but introduces, in addition, a number of features, some of which are in direct opposition to the older teachings.

This treatment may be briefly outlined as follows:

1. A preliminary fast is taken until the urine is free from sugar.

2. Following the fast, carbohydrate food is gradually added, at first in the form of green vegetables.

3. Coincident with the addition of carbohydrate, or in place of it, if the carbohydrate tolerance is very low, protein is added to the diet in small but gradually increasing amounts until glycosuria occurs, or a sufficient amount of protein is taken to cover the basal requirement.

4. Fats are added in small amounts during the time of addition of carbohydrates and protein. Subsequently, a sufficient amount of fat is added to make up the fuel requirements of the body, provided this amount can be tolerated without the appearance of glycosuria or acidosis.

5. Frequent urine examinations are made, either by the medical attendant or by the patient himself, and the appearance of glucose is taken as an indication for a fast of sufficient length to cause a cessation of the glycosuria. Feeding is subsequently begun with not

1. Allen, F. M.: Investigative and Scientific Phases of the Diabetic Question, THE JOURNAL A. M. A., May 13, 1916, p. 1531.

2. Strictly speaking, this statement requires some modification, for there are certain persons who pass sugar in the urine when the blood sugar concentration is normal or even below normal. The glycosuria in such cases seems to be due to an increased permeability of the kidney for glucose. This condition of "renal diabetes" is of infrequent occurrence; it is unaccompanied by the characteristic symptoms of diabetes, such as polyuria, polydypsia and polyphagia; the amounts of sugar excreted in the urine are seldom large, and bear but little relation to the carbohydrate intake. A positive diagnosis of the condition can be made only by demonstrating a normal or low blood sugar content coincident with glycosuria.

3. For the detection of glucose in the urine a very satisfactory reagent is Benedict's (Jour. Biol. Chem., 1909, v, 485), modification of Fehling's solution, since it is very sensitive to glucose, but, unlike the original Fehling's solution, does not react with a number of normal and accidental urinary constituents. The reduction test, if slight, should be confirmed by the fermentation test.

4. Allen, F. M.: Studies Concerning Diabetes, THE JOURNAL A. M. A., Sept. 12, 1914, p. 939; Boston Med. and Surg. Jour., 1915, clxxii, 241; Am. Jour. Med. Sc., 1915, cl, 480; New York State Jour. Med., September, 1915.

more than one half of the carbohydrate contained in the diet at the time of the appearance of glycosuria. Subsequent carbohydrate increase is made very gradually.

6. At intervals, the patient is fasted for a day or else takes a greatly restricted diet.

7. Body fat is reduced to a minimum and the adult diabetic is not allowed to gain weight; children may gain, but the gain must not be adipose tissue.

8. Active daily exercise carried to the point of healthy fatigue is advocated.

THE PRELIMINARY FAST

The object of the preliminary fast is to remove from the body the excess of unassimilated carbohydrates and to allow for a rest of the overtaxed pancreatic function. As a result of the fast, and, indeed, during the fasting period, a proportionately larger amount of carbohydrate may be metabolized. Paradoxical as this may appear at first sight, it has been definitely proved by calorimetric observations on severe diabetics. With the removal of the unassimilated excess, the organism is better able to assimilate an amount of carbohydrate which it was previously unable to utilize.

During the fast, in the majority of instances, there is a decreased production of the potentially harmful aceto-acetic and beta-oxybutyric acids. This, presumably, is the result of the relative increase in carbohydrate assimilation.

The length of fast required before the urine becomes sugar free is usually less than five days; exceptionally, it may be as long as eight or ten days. Water is allowed *ad libitum*, and tea or coffee in moderate amount if desired. No sugar or cream is allowed, though saccharin may be used for sweetening. A reasonable amount of clear meat broth may be taken after the second day of fasting.

Alcohol, in the form of whisky, may be administered, since it does not increase glycosuria, and in certain cases seems to inhibit the production of the acetone bodies. The amount of whisky given may be 1 ounce three times daily. It may be given in black coffee. Alcohol is not an essential in the treatment, and should not be administered to patients in whom it produces such symptoms as burning in the throat, headache and nausea.

During the fasting period weak patients should be in bed. More vigorous ones should exercise as far as practicable, since by exercise the duration of the fast may be shortened.

DURATION OF FAST

The great majority of diabetics may be fasted until the urine is sugar free, without the development of any untoward symptoms or complications. Exceptionally marked prostration, nausea, increasing drowsiness and deep breathing (acyanotic hyperpnea) may occur. These are symptoms referable to acidosis, and occur coincidently with alterations in the composition of the blood, alveolar air and urine. With the appearance of a severe and progressive acidosis, the fast must be terminated for the time being, and treatment directed against the acidosis. (This phase of the subject will be discussed under the head of Acidosis.) After a period of restricted diet a subsequent fast usually results in a sugar-free urine without the development of acidosis.

(To be continued)

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLE HAS BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

CHLORAZENE.—Sodium Para-Toluenesulphochloramine. —$CH_3.C_6H_4.SO_2Na:NCl+3H_2O$.

Action and Uses.—Chlorazene is claimed to be an active germicide acting much like hypochlorites, but being less irritating. Like the hypochlorites it has the advantage over mercuric chloride, zinc chloride, etc., that it does not coagulate or precipitate proteins, such as blood serum. Chlorazene is reported to be practically non-toxic; it is decomposed by the gastric juice, however, and hence should not be administered internally.

Chlorazene has been used with success in the treatment of infected wounds, particularly where a powerful yet non-irritating germicide is wanted. It has been used as an antiseptic mouthwash, for the irrigation of the bladder and uterus and as a urethral irrigant.

Dosage.—Chlorazene is used in 0.5 to 4 per cent. aqueous solution. The wounds, after being cleaned, may be lightly packed with gauze and a rubber tube having previously been inserted, the wound is irrigated at intervals with the chlorazene solution.

Manufactured by the Abbott Laboratories, Chicago. No U. S. patent. U. S. trademark applied for.

Sodium para-toluenesulphochloramine was introduced in medicine by Dakin (H. D. Dakin: Brit. Med. Jour., Aug. 25, 1915; H. D. Dakin, J. B. Cohen and J. Kenyon: *Brit. Med. Jour.*, Jan. 29, 1916, p. 160) who proposed the names chloramine (which, however, had been previously applied to the substance NH_2Cl) and chloramine-T.

Sodium para-toluenesulphochloramine was first made by Chattaway (*Trans. Chem. Soc.*, 1905, lxxxvii, 153) by the action of sodium hydroxide on para-toluenesulphodichloramide. It may also be made by dissolving para-toluenesulphonamide (1 molecule) in a 5 per cent. cold alkaline solution of sodium hypochlorite (1.2 molecule), warming, if necessary, filtering and adding one and one-half volumes saturated sodium chloride solution. The crystals of sodium para-toluenesulphochloramine are collected, washed with sodium chloride solution and dried in the air.

Chlorazene is a white, crystalline powder, having a chlorous odor. It may be rendered anhydrous without decomposition by drying at 100-102 C.

When a small amount of chlorazene is heated, it melts at 160-175 C. (with decomposition).

In neutral solutions chlorazene liberates iodine from iodides, but not bromine from bromides; when acidified with hydrochloric acid, the bromine will then be liberated.

Hydrochloric acid added to a solution of chlorazene produces a white turbidity; on heating chlorine is liberated. Chlorazene is incompatible with many substances, acids (even boric), alcohol and hydrogen peroxide, for instance.

If about 0.1 Gm. of chlorazene be treated with a few drops of sulphuric acid, chlorine is evolved but no blackening occurs (absence of readily carbonizable matter).

If 1 Gm. of chlorazene is dried at 100-102 C. for 2 hours, it loses not less than 17 per cent., nor more than 20 per cent. (water of hydration).

If about 0.5 Gm. (accurately weighed) is dissolved in 50 Cc. of water, 10 Cc. of potassium iodid (10%), and 5 Cc. of acetic acid (36%) added and titrated with tenth-normal sodium thiosulphate, the available chlorine should not be higher than 12.6% or lower than 11.5%. Each Cc. of tenth-normal thiosulphate solution is equivalent to 0.0177 Gm. of chlorine.

Training Schools for Maimed Soldiers in France.—The *Paris Médical* lists the accommodations and the specialties taught at each of the thirty-three professional training schools and business colleges that have been organized for wounded soldiers at as many different points in France, besides the eighteen agricultural schools or model farm schools. Two of the latter are devoted entirely to cheese making, another to osiriculture (growing willows for wickerwork), and the others to training in the care of sheep, cattle, vineyards, etc. The card of each applicant must state the residence town before the war, and the origin and nature of the crippling wounds and also the school or profession he is most interested in.

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SATURDAY, SEPTEMBER 30, 1916

THE BASIS OF ANAPHYLACTIC SPECIFICITY

In their pioneer investigation on the phenomena of anaphylaxis Rosenau and Anderson pointed out that the reaction is "quantitatively" specific, injections of horse serum sensitizing to horse serum only. Later they[1] demonstrated further that an animal could be rendered sensitive at one and the same time to blood serum, egg white, and milk, acting specifically to each on second injection. In the earlier work in this field it seemed likely that the specificity, as a rule, is one of species. The protein of any animal was regarded as specific for the proteins of its particular species generally, there being definitely similar characteristics in the body proteins of animals of like species which, though chemically indefinable, are nevertheless delicately determinable by biologic reactions.

The question was accordingly early raised as to whether the specificity of the anaphylactic action depends primarily on the chemical structure of the protein used or on its biologic origin. What is the real nature of biologic specificity? Does it imply identity of chemical constitution? A decided step in advance in this field of inquiry was taken when Wells and Osborne began the study of the anaphylactic responses to vegetable proteins of widely varying origin and diverse physical and chemical properties. The plants afford a much wider opportunity for the prosecution of researches of this nature inasmuch as their proteins can be isolated with somewhat greater ease and in a state of greater purity. The omnipresent distribution of blood proteins in organs of animals greatly complicates the study of anaphylaxis with proteins derived from such tissues.

Experiments with the vegetable proteins have clearly shown that preparations of unlike properties but derived from the same plant by no means always react anaphylactically to each other. Biologically related proteins may thus fail to respond to each other. On the other hand, it has become evident that typical and severe anaphylaxis reactions may sometimes be obtained when proteins isolated from seeds of different genera are employed for the sensitizing and intoxicating doses in the same animal. In nearly every case such reactions have been developed only by preparations of proteins so nearly alike that differences between them have not been detected by physical or chemical means, or the differences found have been so slight that it seems highly probable that the proteins concerned are very similar in chemical constitution. In a few cases, however, positive reactions have been obtained between proteins which chemical tests indicated have distinct differences in their constitution. Such reactions can be attributed to the existence of common reactive groups in these different compounds.[2]

As the result of their most recent studies in this field Wells and Osborne[3] have still further fortified the biochemical basis of the specificity of anaphylactic reactions. As chemically similar proteins from seeds of different genera react anaphylactically with one another, while chemically dissimilar proteins from the same seed in many cases fail to do so, they conclude that the specificity of the anaphylaxis reaction depends on the chemical structure of the protein molecule. Whether the specificity which is revealed by the anaphylactic reaction implies identity of chemical constitution, or the presence of identical groups, or radicals, in the molecules of the proteins inducing this reaction cannot be definitely settled, Wells and Osborne tell us, until some method is discovered by which the chemical individuality of protein preparations can be positively demonstrated.

1. Rosenau, M. J., and Anderson, J. F.: Jour. Infect. Dis., 1907, iv.

2. Wells, H. G., and Osborne, T. B.: Is the Specificity of the Anaphylaxis Reaction Dependent on the Chemical Constitution of the Proteins or on Their Biological Relations? Jour. Infect. Dis., 1913, xii, 341.

3. Wells, H. G., and Osborne, T. B.: Anaphylaxis Reactions Between Proteins from Seeds of Different Genera of Plants, Jour. Infect. Dis., 1916, xix, 183.

THE REAL MEANING OF FRESH AIR

Somehow the veil of mystery always casts a peculiar influence on most persons belonging to modern society. There is a subtle charm and potency in many unexplained manifestations of nature or traditional mysterious prejudices. Something of this sort, though beneficial rather than baneful to mankind, still seems to attach itself to the current impressions about "fresh air." Frederic S. Lee[1] writes:

> In these days, we hear much of "fresh" air and its merits. We have fresh-air funds, fresh-air schools, and fresh-air babies. All are commendable; but while giving to our funds, opening our schools, and putting our babies out of doors, let us clearly understand what constitutes fresh air. The freshness of so-called "fresh" air lies, not in more oxygen, less carbon dioxide, less organic matter of respiratory origin, and the hypothetical presence of a hypothetically stimulating ozone, but rather in a low temperature, a low humidity, and motion. So far as fresh air itself is concerned, there seems to be nothing more mysterious about it than this.

1. Lee, F. S.: Recent Progress in Our Knowledge of the Physiological Action of Atmospheric Conditions, read before the American Pediatric Society, Washington, D. C., May 8, 1916; Science, Aug. 11, 1916, p. 183.

What, then, are the specific consequences of a vitiated atmosphere, or, as one may more properly express it in the light of present day knowledge, of objectionably high temperatures and humidity? This is the natural formulation of the inquiry on the part of a medical man; for the interest of the thoughtful physician is perhaps more often centered in the causes and manifestation of disease or malaise than in the explanation of beneficial procedures or remedial agents. Some of the aspects of the modern problems of ventilation and the physiologic action of atmospheric conditions, particularly the work of the New York State Commission on Ventilation,[2] have been discussed in THE JOURNAL.[3] Hot, humid, still air is harmful in various ways. It affects the circulatory system, the rate of the heart beat being increased in warm, humid air, and decreased in cool, dry air. Eastman and Lee have seen the pulse rate increase by 39—from 67 to 106—as the temperature of the air surrounding the subject rose from 23.3 to 43.3 C. (74 to 110 F.), and the humidity from 58 to 90 per cent. Observations on the response of the vasomotor mechanism indicate that a distinct vascular benefit follows from exposing the body to cool, dry air. The influence of the atmospheric conditions on the respiratory system are varied in character. A moderate degree of heat and humidity seems to be without effect on the rate of respiration; but more extreme conditions cause a quickening of the breathing, and this is probably accompanied by more shallow respirations. We have previously[3] referred to the evidence presented by Miller and Cocks showing that exposure to heat increases swelling, redness and secretion in the nasal mucosa, and these effects are more marked when the humidity of the air is high. Exposure to cold reverses these effects. It is not unlikely that some of the extreme conditions produced render the membranes favorable for the development of infectious micro-organisms. At any rate, there can be little question that the mucous membrane of the respiratory tract is markedly affected by atmospheric conditions.

Furthermore, the investigations of Lee and Scott[4] at Columbia University have indicated that the distaste for physical labor which is felt on a hot and humid day has a deeper basis than mere inclination—the muscles themselves are actually incapable of performing as much work. These observers state that there is evidently correlation between the decreased muscular power and decreased blood sugar, the muscle fuel. This suggests the existence of a physiologic adaptation such that "when it is physiologically fitting that the animal reduce muscular exertion to a minimum, in order that the output of heat may be as low as possible, as in a hot and humid environment, the supply of fuel will be correspondingly lowered."

It is customary to speak of the body temperature as constant, though diurnal fluctuations are known to exist under conditions which are in every respect normal. Lee[4] has called attention to recent findings of the New York commission with respect to an apparent relationship between the body temperature of man and the temperature of his environment, even under the ordinary conditions of living. Unsuspected, for example, was the fact that during summer months the rectal temperature of its subjects at 8 a. m., living in their own homes, was conditioned by the average atmospheric temperature of the preceding night. If the temperature had been warm, the body temperature in the morning was high; if cool, the body temperature was low. The variation was about 0.55 degree C. (1 degree F.) for 20 degrees of atmospheric temperature. In any event, the body temperature was lowered by confinement in an atmosphere of 20 C. (68 F.) and 50 per cent. relative humidity, and raised by confinement at 23.9 C. (75 F.) with the same humidity, or still more by 30 C. (86 F.) with 80 per cent. humidity. The actual average body temperatures found at these stages, respectively, were: 36.7, 36.9, 37.4 C. (98, 98.5, 99.3 F.).

In extreme atmospheric conditions, greater elevations of temperature are known to arise.[5] A stay of about three hours in an atmosphere averaging 40.4 C. (104.7 F.) in temperature and 95 per cent. relative humidity may produce a rise of several degrees in the body temperature of a normal adult man. These suggestive facts raise the question as to the possible control of body temperature in febrile diseases by regulation of the temperature of the surrounding air.

2. For a general presentation of some of the results of the commission, including C.-E. A. Winslow, D. D. Kimball, F. S. Lee, J. A. Miller, E. B. Phelps, E. L. Thorndike and G. T. Palmer, see Am. Jour. Pub. Health, 1915, v, 85.

3. Ventilation, editorial, THE JOURNAL A. M. A., Nov. 7, 1914, p. 1672; Heat, Humidity and Working Power, Jan. 30, 1915, p. 444; Atmospheric Temperature and Immunity Reactions, May 13, 1916, p. 1553.

4. Lee, F. S., and Scott, E. L.: Am. Jour. Physiol., 1916, xl, 486.

5. Haldane, J. S.: Jour. Hyg., 1905, v, 494.

YEAST NUTRIMENTS IN BREAD-MAKING

A few years ago one of the large American baking companies noticed that when identical raw materials (except the water) were used in the manufacture of their bread in different cities, it was necessary to change the quantity of yeast as well as the fermentation period in order to produce a standard product. On investigation by a group of workers at the Mellon Institute,[1] it was found that the activity of the yeast was affected by the mineral salts in the natural waters, which content, of course, was different in the various localities. These workers therefore studied in detail the action of various salts in bread-making. They report that the salts of mineral acids, such as chlorids, nitrates, nitrites and sulphates, exert practically

1. Kohman, Henry A.; Hoffman, Charles; Godfrey, Truman M.; Asche, Lawrence H., and Blake, Alfred E.: On the Use of Certain Yeast Nutriments in Bread-Making, Jour. Ind. and Eng. Chem., September, 1916, p. 781.

no influence, except when combined with a cation which in itself has an effect. The presence of carbonates particularly are detrimental, as they neutralize the acids in the dough and thus interfere with the progress of fermentation. Surprisingly, neither phosphates nor the ordinary potassium salts exerted any appreciable influence. The common occurrence of the alkali-earth salts — especially of calcium — in natural waters prompted their exhaustive investigation. It was demonstrated that the chlorid, bimalate, sulphate, nitrate and soluble phosphates of calcium each gave a decided increase in the volume of the loaves and the gas production when incorporated in the bread by the use of water containing a small amount of the salt, and employing the usual quantity of yeast. The texture, flavor and general appearance of the bread were improved. In case of the chlorid of calcium the volume of the loaf was increased a greater amount, due to its action on the gluten of the dough as well as the yeast. The accelerating effect of the calcium salt — or any other yeast nutriment — can be taken advantage of by reducing the amount of yeast used and still having available the same volume of evolved gas as in the ordinary procedure of more yeast but no nutriment salt.

In connection with the water research, the utilization of stale bread offered an important problem. One utilization method investigated was such that glutamic acid was formed in relatively large amounts. The effect of the glutamic acid on the bread was beneficial, increasing the gas production of the yeast. This nutrient action on the yeast was found to be due to the nitrogen content of the glutamic acid. Subsequently the common mineral salts of ammonium were used, and the results were similar to those in the case of the calcium salts. The authors next worked with a mixture of calcium chlorid and ammonium sulphate. One gram of calcium chlorid plus one-half gram of ammonium sulphate to one kilogram of flour caused a saving of approximately 50 per cent. of yeast.

There are two distinct objects to be accomplished in the fermentation of bread: (1) the aeration of the bread — by means of the evolved gases; (2) the maturing or aging of the bread — a secondary action of the yeast. The Mellon Institute investigators found that as small an amount as 0.015 gm. of potassium bromate (used in the water) per 1,000 gm. of flour will age the dough and decrease the necessary amount of yeast by about 15 per cent. After many experiments the authors conclude that *50 to 60 per cent. of the yeast may be saved* by using in the water a mixture of 0.015 gm. of potassium bromate, 1.2 gm. of calcium chlorid and 0.5 gm. of ammonium sulphate; that the proper use of the nutrient salts maintains more uniform bread and better quality, flavor, texture and "bloom"; that the initial fermentation is slowed, which has an interesting significance in that about *2 per cent. of the sugar (calculated on the entire flour content) is kept from being converted* into needless carbon dioxid and alcohol. In the state of Kansas alone it is estimated this would cause a saving of 80,000,000 pounds of sugar a year.

However, the mere addition of these minerals is of considerable importance from a medical point of view. In our modern methods of milling the greater part of the mineral constituents of wheat is lost in the preparation of white flour. As shown by Teller,[2] seven-eighths of the phosphoric and eleven-fourteenths of the potash and lime contents are found in stock feed — a discarded portion of the wheat in flour-making. Hence a partial restoration of these salts is highly desirable. This latest research on bread seems to indicate that if the public would cast away the aesthetic requirements for white flour and use whole wheat flour instead, the result would be better bread, at less expense, and above all a more healthful product.

THE INFECTIVITY OF THE MOSQUITO IN MALARIA

The potentialities for harm which human warfare harbors appear to be greater and greater in harmony with the progressive evolution of human knowledge. The arrow and the spear were replaced by the rifle; and this in turn has assumed a minor rôle in competition with the rapid-fire machine gun, which finds a thousand marks where formerly a single hit was recorded. Somewhat similarly in the warfare of our insect enemies on mankind their potency for hurling the shafts of infectious disease is becoming more and more formidable as our appreciation of their ways and means of attack is enhanced. When Ronald Ross discovered at Calcutta, July, 1898, that the spores of malarial parasites were concentrated, not in the intestine, as he and Manson had supposed, but in what proved to be the salivary gland of the mosquito, the stronghold of an enemy of mankind was located. In his own words:

> The exact route of infection of this great disease, which annually slays its millions of human beings and keeps whole continents in darkness, was revealed. These minute spores enter the salivary gland of the mosquito, and pass with its poisonous saliva directly into the blood of men. Never in our dreams had we imagined so wonderful a tale as this.[1]

Today these interesting facts no longer satisfy the needs of the defender in the warfare against malaria. The whole question of the importance of the mosquito as a vector of malaria, writes an expert in the Public Health Service, resolves itself into a consideration of numerical potentialities. How many mosquitoes succeed in obtaining a blood meal, and of these what percentage succeeds in developing the malarial cycle? Ronald Ross estimates that only one out of twenty-four anophelines manages to bite a human being, and

2. Ark. Agri. Expt. Station, Bull. 42.
1. Ross, R.: Jour. Roy. Army Med. Corps, London, 1905, iv, 572.

this proportion is greatly reduced, economically measured, because less than 25 per cent. succeed in the rôle of carriers. Roughly considered, then, we may look on one out of every 100 female anophelines in a malarial country as a possible infecting agent. This one mosquito, regarded as a health disturber, must be evaluated in terms of certain biologic factors in order to appreciate the potency and extent of its parasitism in the conveyance of malaria.[2]

It is now positively known that the bite of a single Anopheles can cause malarial fever. Whether the same insect, which may be able to bite several persons, can convey infection repeatedly without again obtaining blood from an original source of infection is evidently a question of considerable moment, for with the chances of disease transmission enormously increased by the possibility of successive infectibility the necessity for the intensive elimination of the mosquito becomes emphasized more prominently than ever. The individual insect becomes a veritable machine gun in point of danger. In precisely such problems the knowledge of the habits of our insect enemies has become of great importance to man. The crux of the situation has been outlined as follows:

> A mosquito which, ticklike, satisfies its food demands by a prolonged, uninterrupted aspiration of blood and resumes its normal function as regards procreation without a second blood meal, does not play a rôle which need attract the attention of the sanitarian. Opposed to this form, however, a mosquito like the plasmodia-bearing Anopheles shows its evil possibilities at the outset by its insatiable food requirements. It may demand three complete meals of blood before providing for one of several egg layings. It may be in the habit of taking a short meal and, interrupting itself automatically, leave one host in order to rest or to attack another host. Although it has been found that an anopheline mosquito may survive for a period of sixty-seven days without partaking of blood, a typical member of the genus requires a blood meal approximately every three days in order to thrive and perpetuate its kind. When a full meal is not taken, due to an interruption on the part of mosquito or host, it is necessary to consummate its purpose in a further attack on the same or a different host. In this way the anopheline mosquito becomes an important factor from the point of view of disease transmission. Bearing this in mind, the sanitarian must then determine to what extent a mosquito which has already contaminated its gustatory parts in biting a malaria-diseased human being becomes a menace to the public health.[2]

The U. S. Public Health Service[2] has recently conducted a series of Anopheles infectivity experiments on human subjects. They show in no less than eleven experiments that short exposure to bites, where the mosquitoes are interrupted in their feeding, is sufficient to cause successful transmission of the disease. It merely serves to corroborate a now classic story to report that in seventeen of the experiments in which human beings were employed to test the infectibility of *Anopheles punctipennis* with *Plasmodium vivax*, fourteen cases of malarial fever resulted. Statistics like this approach the degree of perfection that is found in quantitative chemical experiment in the laboratory. The sporozoites in the mosquitoes used developed from ten to twenty-two days after the definite hosts were given an opportunity to bite a patient harboring a scanty number of mature tertian gametocytes.

In an attempt to infect several persons with a single specimen of *Anopheles punctipennis*, one mosquito proved to be the sole infective agent in one experiment and one proved to be the sole infective agent in three experiments. These two specimens when applied to the same person transmitted the infection in five cases, while one of them used with a third mosquito succeeded in infecting four persons. In these experimental inoculations it was demonstrated that in nine instances in which two mosquitoes succeeded in transmitting malaria at least one of the pair was proved to be capable of causing the disease when used singly. In all of the successful inoculations only tertian infection was reproduced.

There is no proof that the mosquito is in any way deleteriously affected by the malarial parasite; but the ability of an infected insect to strike repeated blows before its power for harm has been lost can scarcely be doubted. The experiments to which we have referred recall the unheralded heroism of the persons, including many physicians, who have offered themselves for inoculation in the cause of the advancement of knowledge. These newest contributions from the government service are among the last which received the guidance of the late Surg. R. H. von Ezdorf, U. S. P. H. S.,[3] an esteemed expert on yellow fever and malaria, whose untimely death was a distinct loss to the Public Health Service and to sanitary science.

2. Mitzmain, M. B.: Anopheles Infectivity Experiments. An Attempt to Determine the Number of Persons One Mosquito Can Infect with Malaria, Pub. Health Rep., 1916, xxxi, 2325.

Current Comment

THE SUPRARENALS AND THE THYROIDS

Suggestions of possible interrelations among the ductless glands have not been lacking in recent years. Various functional changes in the body have been explained by assumptions of more or less complex pluriglandular activities resulting in the promotion or the retardation of the performance in question in accord with the relative participation of the different endocrine structures concerned in the hypotheses. Attention was recently directed to the accumulated evidence pointing toward a definite influence of sympathetic impulses over thyroid activity.[1] It is known that the internal secretion of the suprarenal glands, or epinephrin, will have the same effect in the body as sympathetic impulses. Cannon and Cattell[2] have

3. An obituary notice appeared in THE JOURNAL A. M. A., Sept. 16, 1916, p. 893.

1. The Innervation of the Thyroid Gland, editorial, THE JOURNAL A. M. A., Sept. 23, 1916, p. 954.

2. Cannon, W. B., and Cattell, McKeen: Studies on the Conditions of Activity in Endocrine Glands, III, The Influence of the Adrenal Secretion on the Thyroid, Am. Jour. Physiol., 1916, xli, 74. Cannon, W. B.: Studies of Ductless Glands by the Electrical Method, Proc. Nat. Acad. Sc., 1916, ii, 319.

recently demonstrated that injection of a small dose of epinephrin evokes a marked action current in the thyroid gland. This is taken by them, in harmony with observations on the behavior of glands when tested by the electrical method, as a sign of glandular functioning.[1] Stimulation of the nerve to the suprarenal gland so as to cause its secretion to be poured forth into the blood stream will also evoke a characteristic electrical change in the thyroid. This electrical change does not occur if the return of blood from the abdomen is prevented, but takes place promptly when the pent blood is released. Furthermore, it fails to appear after stimulation of the nerves if the suprarenal glands have been removed previously. An influence of suprarenal secretion on thyroid activity seems thus to be definitely established. Cannon and Cattell point out that apparently the amount of suprarenal secretion liberated by the splanchnic stimulation is sufficient to excite the thyroid gland in a manner similar to its excitation by sympathetic impulses and by epinephrin injections. They add that obviously the efficiency of sympathetic impulses in provoking activity of the thyroid might be greatly augmented by the simultaneous secretion of the suprarenal glands. It is regarded as significant that both the thyroids and the suprarenals would be stimulated simultaneously by the diffusely distributed impulses of sympathetic neurons. Attention has been called to the emergency function of the suprarenal glands in times of emotional stress, as distinguished from a purely routine function.[2] There is doubtless what may be called a routine performance of the thyroid which serves to keep metabolism normal in some of its aspects. But because this gland is subject to sympathetic impulses and because it is now demonstrated to respond to such stimulation with great promptness,[1] Cannon ventures the belief that it also has an emergency function — one that is exercised particularly in emotional crises. That this behavior is an exaggerated form of the routine activity of the gland is at present, of course, purely a speculation.

3. Cannon, W. B.: Am. Jour. Physiol., 1914, xxxiii, 356. Newer Views of the Functions of the Adrenals, editorial, The Journal A. M. A., July 25, 1914, p. 322.

THE AURICULAR CONTRACTIONS OF THE HEART

The discovery by His of a distinct band of muscular fibers passing from the auricles to the ventricles — the auriculoventricular bundle — furnished an anatomic basis for the physiologic behavior of the heart. This bundle forms the only continuous muscular tissue between the auricles and ventricles; its destruction results in complete abolition of the normal sequence of beat between these two sets of chambers in the heart. Such information, together with what were at first purely experimental studies, has contributed largely to the present widespread interest in the cardiac arrhythmias and the manifestations of heart block which only a few years ago were rarely spoken of in clinical medicine. The discovery of the "pace-maker" of the heart in the mass of Purkinje tissue commonly designated the sino-auricular node has furnished further information of a specific character. Here at each beat the contractions start, spreading along the auricular muscle in all directions. When the sino-auricular node is put out of action the rhythmic sequence of the heart beat may still be continued, its function being taken up by the auriculoventricular node. According to the preponderance of opinion each beat of the heart begins by a simultaneous contraction of both auricles, associated with a retraction of the auricular appendages. The contraction, which is followed by that of the ventricles, lasts about a tenth of a second. Bachmann[1] has recently pointed out, however, that if the rate of propagation of the excitatory process through auricular muscle is the same throughout, it may be expected that parts at a sufficiently greater distance from the sino-auricular node than nearby parts, would show an appreciable time difference in the onset of their contraction. Thus the left auricle, though in direct and common muscular connection with the right auricle, may be expected to contract later than the right. It is generally taught that the contractions of the two auricles are synchronous. Bachmann has submitted the question anew to experimental investigation in the physiologic laboratory at the Emory University School of Medicine in Atlanta, Ga. He has found that the time of onset of right and left auricular contraction, contrary to general belief, is not synchronous. The excitatory wave originating in the sino-auricular node reaches the right auricle sooner than the left; hence the right auricle contracts an appreciable time before the left. The time difference averages 0.013 second. The most important path of conduction between the two auricles appears to be the interauricular band. Its special importance is demonstrated by the effects of crushing the band, the conduction being delayed from 3 to 4.6 times the normal average. The interauricular band has not the same importance relatively to the auricles that is possessed by the auriculoventricular band, as crushing does not cause a complete block. Its importance lies in the circumstance that its fibers form the most direct interauricular path and that the rate of conduction is highest along this path.

1. Bachmann, G.: The Inter-Auricular Time Interval, Am. Jour. Physiol., 1916, xli, 309.

Hospital-Home for Children with Inherited Syphilis.—It was Professor Welander of Stockholm who first organized a special asylum for children with congenital syphilis, where they could be kept for three or four years and given thorough treatment. His *Lilla Hemmat* was opened in 1900 with accommodations for five children. In 1910 another was opened, equipped for fifty or sixty children. The institutions have proved extremely successful, not only in improving the lot of the children by thorough treatment in a hygienic environment, but by preventing their infecting others. A similar "home" was organized at Copenhagen in 1905, with places for ten children; one in Christiania, equipped for fifteen, and in 1909 a similar institution was opened at Berlin. In 1913, under the initiative of Professor Ehlers, it was decided to organize a larger home of the kind at Copenhagen, and seventy committees throughout the land collected funds for it and the opening occurred recently. It is arranged to care for fifty-two children at a time and represents an expenditure of 3,000 kroner ($804) per bed, the grounds having been donated by the city. In his opening address, Ehlers made a plea for the state to assume the support at the "Welanderhjemmet" of children unable to pay their way.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

DISTRICT OF COLUMBIA

"Patent Medicine" Advertising Improves.—A special committee of the Retail Merchants' Association on "patent medicines" and their advertisement has recently reported that the newspapers of Washington have as a whole made more progress in purging their columns of objectionable advertisements of quack medicines than an equal number of newspapers in any other city of the same size in the United States. That there is still room for improvement is shown by the committee's appeal to all daily papers to refuse to print false medical advertisements. Dr. Lyman F. Kebler of the department of agriculture was on the committee to represent the interests of the public in the matter, and acted as chairman. The association unanimously adopted the report.

A Municipal Dairy Urged by Milk Producers.—After an exhaustive investigation into prevailing local methods of producing and distributing milk, in the hope of finding some way by which the distributor might pay the producer a better price for his milk without increasing the price charged the consumer, the Maryland and Virginia Milk Producers' Association has come out flatly in favor of a municipal dairy. The project which the association has formulated and is prepared to back calls for the establishment of a municipal dairy, to be provided by the district government, to handle, pasteurize, inspect, grade and bottle all milk, and it is suggested that in connection with this projected dairy it would be feasible and would ultimately result in great economy to create also a single cooperative or even publicly owned and controlled distribution service.

ILLINOIS

Smallpox Closes Schools.—The discovery of seven cases of smallpox in West Kankakee, September 22, resulted in the issuance of an order by Dr. Charles E. Crawford of the state board of health to close the Central and Longfellow schools and St. Joseph's Seminary for two weeks.

Psychiatric Institute Transferred.—The State Psychiatric Research Hospital, Kankakee, has been closed by order of the state board of administration, and its offices have been transferred to the Cook County Psychiatric Hospital, Chicago. The institution is to be under the charge of Dr. H. Douglas Singer, Hospital.

Typhoid Fever.—Up to date there have been fourteen deaths from typhoid fever in the Elgin epidemic. Steps have been taken to protect the milk supply of Chicago, a large amount of which is obtained from the territory around Elgin. At present there are said to be 180 cases of the disease, and nurses have been called from Chicago and surrounding towns to assist in the care of the sick.——At Lincoln there are said to be about thirty cases of typhoid fever, with three deaths, at the State School and Colony.

Chicago

Personal.—Dr. John Clarence Webster is ill with cholecystitis in the Royal Victoria Hospital at Montreal, and will probably not return to work in Chicago this fall.——Dr. Frederic A. Besley has been appointed professor of surgery in Northwestern University Medical School and a member of the attending surgical staff at Mercy Hospital.——Prof. Clarence D. Blachley, formerly superintendent of the Bureau of Social Surveys in the Chicago Department of Public Welfare, has been appointed professor of social science at Goucher College, Baltimore.——Dr. Sidney D. Jones has been placed in charge of the Fort Dodge (Iowa) Clinical and Roentgen-Ray Laboratory, succeeding Dr. Thomas H. Glenn.

Insanity Survey.—A comprehensive survey of the facilities for dealing with mental diseases and mental deficiency in Cook County is to be begun at once by Herman M. Adler, Boston, assistant professor of psychiatry in Harvard University, under the auspices of the National Committee for Mental Hygiene. The purposes of the inquiry is to obtain a report based on scientific facts as to the care mentally ill persons are receiving in the county institutions and whether proper steps are being taken to lessen the number of such cases by the application of approved modern treatment. The committee on local and state charities of the Chicago City Club and Illinois Society for Mental Hygiene are cooperating in this work.

MARYLAND

Personal.—Dr. J. Hubert Wade, Boonsboro, has been appointed a member of the Penal Board of Maryland by the governor. This board has control of the House of Correction and the Maryland Penitentiary.——Dr. Henry Lee Smith of the Medical Reserve Corps, United States Army, who has been on duty as medical examiner in the mobilization camp at Mt. Gretna, Pa., since July, has been appointed camp surgeon.——Dr. James J. Mills, instructor in eye surgery at the Johns Hopkins Hospital, has finished a special assignment for the French government at Biarritz and will return to this country within a few weeks. He has spent the past six weeks treating the wounded eyes of French soldiers.——Dr. Alfred W. Brown, medical supervisor of the Public Athletic League, Baltimore, has resigned and will enter the practice of medicine in British Columbia.

Typhoid Fever Situation Improved.—An improvement in the typhoid fever situation in Baltimore has been reported by Dr. William T. Howard, Jr., assistant commissioner of health. Thirty-three cases have been reported since last Saturday and there have been two deaths. There were forty-eight cases and three deaths for the week ending September 15. Dr. John D. Blake considers the situation very encouraging, since September is in the typhoid season. Dr. C. Hampson Jones of the state department of health declared that there is less typhoid in the counties than during last year. That human carriers are largely responsible for the spread of typhoid fever is a statement made by the health department in a recent *Bulletin*. A number of rules were also laid down by the department in the *Bulletin* as a guide to families in which typhoid fever occurs. These rules will be strictly enforced by the department.

Infantile Paralysis Situation in Maryland.—Several new cases of infantile paralysis have been reported during the past week, but on Friday the records at the city health department were clear for the first time in five weeks, no cases having been reported that day. On account of one case in Brunswick, children under 13 years of age have been forbidden to attend moving picture theaters.——The city health department permitted children in the higher grades to attend school on Monday, September 25, but children in the kindergarten, primary department and grades up to the sixth will be kept at home until there is no longer any danger of the spread of infantile paralysis. Dr. C. Hampson Jones, Baltimore, head of the department of communicable diseases of the state board of health, is in favor of the county schools opening at once.——Dr. Warren H. Hoak, acting assistant surgeon of the United States Public Health Service, has joined P. A. Surg. James R. Hurley in Baltimore and is assigned to night duty at Union Station.

NEW YORK

Westchester Must Purify Sewage.—A notice has been served on the members of the Westchester County Board of Supervisors and Manager John J. Brown of the Bronx Valley Trunk Sewer Commission to the effect that the United States government would bring suit to force the removal of the sewage pipes from the Hudson River at Yonkers unless the county built a filtration plant. A similar action was brought in 1912 but was dismissed on the signing of a stipulation that the commission would purify the sewage before it reached the Hudson River.

New York City

Personal.—Dr. Herbert R. Brown, assistant director of the Massachusetts State Department of Health, Boston, has accepted the position of pathologist to the Rochester Homeopathic Hospital, Rochester, N. Y.——Dr. Fred H. Albee has arrived home from the war zone.

Hospital in Need.—The New York Ophthalmic Hospital announces that it has experienced a lack of funds and a falling off in subscriptions since the beginning of the war, and that unless it receives financial aid it will be compelled to close its doors. Two of the free clinics for children have already been closed.

Start Cooperative Charity Campaign.—The Federation for Support of Jewish Philanthropic Societies, which has recently been organized for the purpose of collecting and receiving donations for member societies or for equitable distribution among them, has begun, under the leadership of Felix M.

Warburg, a campaign to increase the yearly total of Jewish benefactions to $2,000,000. It is believed that philanthropies will be much benefited by a polling of their interests, and that the distribution of benefits will be much more business-like.

The Infantile Paralysis Epidemic.—During the week ending September 23, the number of new cases of infantile paralysis has shown a considerable decrease. Whereas during the previous week the number of new cases reported daily ranged between thirty and forty, during the week just passed they averaged below thirty. September 22, there were only twenty cases reported, with six deaths. The total number of cases to date is 8,861, with 2,226 deaths. The number of cases in the state outside the city of New York has shown a similar decrease.——A conference was held in the office of the mayor between Dr. Haven Emerson, commissioner of health, and William G. Wilcox, president of the board of education, for the purpose of reaching a final decision as to the advisability of opening the schools on September 25, in view of the fact that the parents' association had made a vigorous protest against this step during the week. It was decided that the children would not be exposed to danger in coming together in the schoolroom. No children or teachers from infected houses will be permitted to enter the schools.——The brace fund has reached about $40,000 and the goal now set is $50,000. It is said that this will be none too much, as there will be about 5,000 cripples to be cared for.

The Communicability of Poliomyelitis.—A recent *Bulletin* of the department of health publishes a preliminary study of 7,000 cases of infantile paralysis with reference to the number of cases of the disease occurring in a family. There was only one case in a family in 6,521 instances; there were two cases in a family in 205 instances; three cases in twenty families, four cases in one family and five cases in one family. It is pointed out that this does not answer the question as to the communicability of the disease, for it might be possible that in a large percentage of the families included in this study there was only one child. It is hoped that further study will throw more light on this subject by including in the figures the number of children exposed in a family. Another group of figures which takes into consideration 7,496 cases of infantile paralysis shows that 751, or 10 per cent., were found among children under 1 year of age; 5,662, or 15.5 per cent., among children between 1 and 5 years of age; 812, or 10.8 per cent., among children between the ages of 6 and 10 years; 142, or 1.9 per cent., among children between the ages of 11 and 15 years, while 129, or 1.7 per cent., occurred among persons more than 16 years of age. Children between the ages of 2 and 3 years were most often the victims; there were 1,714 of these. Of children between 1 and 2 years old, 1,541 were victims, while those from 3 to 4 years numbered 1,278; from 4 to 5 years the number was only 618.

OREGON

State Society Meeting.—The forty-second annual meeting of the Oregon State Medical Association was held at the German House, Portland, September 13 to 16, under the presidency of Dr. William Kuykendall, Eugene, and the following officers were elected: president, Dr. Robert C. Yenney, Portland; vice presidents, Drs. Leo W. Chilton, Canyon City; Everett Mingus, Marshfield, and William J. Johnson, Corvallis; secretary, Dr. Clarence J. McCusker, Portland, and treasurer, Dr. Katherine C. Manion, Portland.

Personal.—Dr. Grover C. Bellinger, Salem, was reelected assistant secretary-treasurer of the Oregon Association for the Prevention of Tuberculosis at its first annual meeting in Portland, September 13.——William T. Foster, president of Reed College, Portland, was elected president of the Oregon Social Hygiene Society at the annual meeting held in Portland, September 8.——Dr. Luther H. Hamilton, Portland, has been elected president; Dr. Herbert S. Nichols, Portland, secretary, and Dr. Urling C. Coe, Bend, treasurer of the Oregon State Board of Medical Examiners.

PENNSYLVANIA

Personal.—Dr. Claude D. Roop, superintendent of the Lancaster County Hospital and Insane Asylum, has resigned to become assistant physician to the Norristown Insane Hospital.

Infantile Paralysis.—From July 1 to September 16, 1,278 cases of infantile paralysis have been reported to the state department of health, with 307 deaths. Of these cases, 719 were reported from Philadelphia and 559 from other parts of the state. The state commissioner of health announces the opening at Rosemont of a new hospital for the treatment of acute cases of infantile paralysis.

Coroners Elect Officers.—At the annual meeting of the Pennsylvania State Coroners' Association held in Harrisburg, September 13, the following officers were elected: Dr. Charles L. Ashley, Plymouth, president; S. C. Jamison, Allegheny, and James T. Heffran, Washington, vice. presidents; and G. H. Moore, Washington, secretary-treasurer. The association adopted resolutions declaring that all coroners should be physicians. Wilkes-Barre was selected as the next place of meeting.

New State Officers.—At the sixty-sixth annual meeting of the Medical Society of the State of Pennsylvania held in Scranton, September 18 to 21, a program was adopted which contemplates demanding: the amplification of the Harrison Narcotic Law so that the state may protect itself in holding physicians, druggists and dispensers responsible not only for the distribution of drugs, but also of alcohol; amendments to the compensation law increasing the remuneration allowed for medical attention to injured employees in the event of the necessity of a major operation, extending this limit from $75 to $200, and prolonging the treatment period without compensation to the disabled employee from thirteen to forty days; a milk hygiene law which will safeguard the milk supply at the source by state inspection of dairy farms at places where milk and milk products are shipped. The following officers were elected: president, Dr. Charles A. E. Codman, Philadelphia; president elect, Dr. Samuel G. Dixon, Harrisburg; vice presidents, Drs. John B. Corser, Scranton; Joseph W. Albright, Muncy; J. Treichler Butz, Allentown, and Herbert B. Gibby, Wilkes-Barre; secretary, Dr. Cyrus Lee Stevens, Athens (reelected); assistant secretary, Dr. Clarence P. Franklin, Philadelphia (reelected); treasurer, Dr. George W. Wagoner, Johnstown (reelected); manager of sessions and exhibits, Dr. William H. Cameron, Pittsburgh (reelected), and trustees for three years, Drs. Theodore B. Appel, Lancaster (reelected); Horatio W. Gass, Sunbury (reelected), and William W. Lazarus, Tunkhannock. The next meeting is to be held Sept. 24 to 27, 1917, at Pittsburgh.

Philadelphia

Urge Dairies to Use Paper Milk Bottles.—Sanitary paper milk bottles will soon follow the sanitary paper drinking cup into public favor, if plans to amend the law governing the delivery of milk in glass bottles are successful.

Memorial Laboratory to be Established.—A memorial research laboratory to the memory of Dr. Earl C. Peck, first assistant resident physician at the Philadelphia Hospital for Contagious Diseases, who died recently from anterior poliomyelitis, is urged by Dr. John B. Carrell, Hatboro, as a fitting memorial to Dr. Peck.

Medico-Chirurgical College Transfers Realty.—One of the final transactions of the merger of the Medical School of the University of Pennsylvania, the Medico-Chirurgical College, and Jefferson Medical College was consummated, September 21, when the real estate holdings of the Medico-Chirurgical College were transferred to the trustees of the university. The college buildings, assessed at $375,550, and two four-story houses, assessed at a total of $54,000, were conveyed for a nominal consideration. These will eventually be conveyed to the city by the university and the buildings demolished, as they are in the line of the new parkway.

RHODE ISLAND

Books Donated for Library.—The directors of the Redwood Library and Athenæum, Newport, at a meeting, September 19, received the report of the committee regarding the recent donation of books from the medical library of the late Dr. Rufus E. Darrah, and after thanking Mrs. Darrah for the gift, recommended that the report be formally adopted by the directors and that copies thereof be communicated to Mrs. Darrah and to the lay and medical press.

Health Survey.—P. A. Surg. Paul Preble, U. S. P. H. S., with the assistance of Sanitary Engineers John K. Hoskins and Harry R. Crohurst, with the cooperation of the state board of health, began a general survey of the streams and harbors, food and drinking supplies and general health aspect of Rhode Island with especial reference to the prevalence of typhoid fever.

SOUTH CAROLINA

Hospital Notes.—The Clinton Hospital was incorporated, August 14, with a capital stock of $15,000. Dr. L. St. Clair Hays will be in charge of the institution. The medical board

is composed of Drs. Thomas L. W. Bailey, James W. Davis, J. Lee Young and L. St. Clair Hays.——The cornerstone of the new Pryor Hospital, Chester, was laid with Masonic ceremonies recently. The building is four stories in height, with basement, fireproof throughout, will cost $60,000, and is expected to be ready for occupancy this fall.

Sanatorium Needs Funds.—The Hopewell Sanatorium, which is operating under the direction of the Greenville County Antituberculosis Society, has made an appeal for funds for its maintenance, and asks for annual dollar subscriptions for the support of the institution.

UTAH

New State Association Officers.—At the twenty-second annual meeting of the Utah State Medical Association held in Salt Lake City, September 12 and 13, under the presidency of Dr. Eugene W. Whitney, Salt Lake City, the following officers were elected: president, Dr. Samuel C. Baldwin, Salt Lake City; vice presidents, Drs. Joseph R. Morrell, Ogden; Philemon M. Kelly, American Fork, and David C. Budge, Logan, and treasurer, Dr. Thomas A. Flood, Salt Lake City. Dr. W. Brown, Ewing, holds over as secretary, and councilor from the third district, Dr. Horace G. Merril, Provo. The next meeting is to be held in Salt Lake City.

CANADA

Sanatorium Acquired.—The Rocky Mountain Sanatorium, Frank, Alta., has been acquired from the French-Canadian Collieries Company by the Dominion Hospitals Commission as a sanatorium for the treatment of soldiers affected with tuberculosis and who belong to the western provinces of Canada. It contains sixty rooms. In conjunction with the Ninnette Institution in Manitoba and the Transquille Sanatorium near Kamloops, B. C., the new sanatorium will provide for all those afflicted with the disease west of the Great Lakes.

Personal.—Surg.-Gen. Guy Carleton Jones, Ottawa, Ont., director of the Canadian Medical Services, has had conferred on him the insignia of the Legion of Honor by the president of France in recognition of valuable services.——Dr. Norman E. McKay, Halifax, N. S., has been elected president of the Provincial Medical Board of Nova Scotia, in succession to Dr. John Stewart, Halifax, who is abroad at the front with Dalhousie University Hospital Unit. Dr. McKay and Dr. Willis B. Moore, Kentville, N. S., will represent the board on the Medical Council of Canada.——Dr. Deloss E. Bell, Brockville, has been appointed physician to the Board of the Workmen's Compensation Act of Ontario.——The Distinguished Conduct Medal has been awarded to Hon. Lieut.-Quartermaster W. G. Ruswell, C. A. M. C., for untiring work during many days in directing the evacuation of wounded. ——Dr. Edward S. Hasell, who has been medical superintendent of the Provincial Royal Jubilee Hospital, Victoria, B. C., since 1897, has been appointed chief medical superintendent of Military District No. 11. He has also received the appointment of medical superintendent of the military hospitals in British Columbia. He will be assisted by an advisory board composed of Drs. Roderick L. Fraser and Oswald M. Jones, Victoria, B. C.——Dr. Herbert S. White, McBain, Mich., has joined the Canadian Army Medical Corps.

GENERAL

Southwestern Physicians to Meet.—The tenth annual session of the Medical Association of the Southwest will be held in Fort Smith, Ark., October 2 to 4. The first of these days will be devoted to clinics at the various hospitals.

United States Census Bureau Gets New Chief Statistician. —Dr. William H. Davis, Boston, has been appointed chief statistician, division of vital statistics, United States Bureau of the Census. Mr. R. C. Lappin, who has filled the office since the resignation of Dr. Cressy L. Wilbur, Albany, N. Y., several years ago, has been assigned to other duty. Dr. Davis has been the vital statistician of the Boston Health Department for some years, and was appointed to his present office on the basis of civil service examination.

Virginia Will Bar Children from Infected States.—All Pennsylvania Railroad trains carrying children under 16 years of age from New York, Pennsylvania and New Jersey into the state of Virginia are liable to be quarantined as a result of a conference in Philadelphia, September 16, between the officials of the railroads and Dr. Roy K. Flannagan, assistant state health commissioner of the state of Virginia. Dr. Flannagan visited Philadelphia to determine why New York, Philadelphia and Norfolk trains carry children in violation of the rules placed in effect, August 25. He stated that 50 per cent. of the cases of infantile paralysis in Virginia today came from the North, some from New York and some from Philadelphia.

Bequests and Donations.—The following bequests and donations have recently been announced:

Social Workers Tuberculosis Sanatorium, Milwaukee, $1,750, the proceeds of Tag Day, September 4.

Fund to buy braces for children crippled by infantile paralysis, New York, a donation of $2,000, from Mrs. Pembroke Jones, Newport, R. I.

Hospitals of Monmouth County, N. J., a donation of $2,500, from President Wilson.

St. Joseph's and St. Elizabeth's hospitals, Chicago, each $5,000, by the will of Mary J. McLaughlin.

Ward for infantile paralysis in Surgical Wing of the University of Pennsylvania Hospital, Philadelphia, a donation of $1,000, from State Health Commissioner Samuel G. Dixon, conditional on the raising of $4,000 additional.

To found the John Graves Forbe Memorial Hospital, Georgetown, Ky., a donation of $1,000, by Archer M. Huntington, New York.

Health Experts to Meet.—The forty-fourth annual meeting of the American Public Health Association will be held at Cincinnati, October 24 to 27, under the presidency of Dr. John F. Anderson, New Brunswick, N. J. On the first afternoon there will be a symposium on mental hygiene. The address of welcome and the president's address will be delivered on the same evening, and there will be a symposium on public health nursing on the second morning. Outside of the general session the work of the convention will be divided into public health administration; laboratory; vital statistics; sanitary engineering; sociology and industrial hygiene.

Instructors at Army Medical School.—The following officers of the Medical Corps have been ordered to duty in the faculty of the Army Medical School, Washington, D. C., for the session beginning October 16: Col. William O. Owen, professor of medical department administration; Lieut.-Col. Champe C. McCulloch, Jr., professor of military hygiene; Maj. Carl R. Darnall, professor of sanitary chemistry; Maj. William H. Moncrief, professor of operative surgery, and Capt. Philip W. Huntington, professor of roentgenology. The Army Medical School, for many years located at 721 Thirteenth Street, N. W., was recently transferred to the building formerly occupied by the district commissioners, at 462 Louisiana Avenue.

Sectional Conferences on Tuberculosis.—The National Association for the Study and Prevention on Tuberculosis announces that in October five conferences on tuberculosis will be held in various parts of the country. The Mississippi Valley Conference will meet at Louisville, Ky., October 4 to 6; the New England Conference in New Haven, Conn., October 12 and 13; the Southern States Conference at Albuquerque, N. M., October 12 and 13; the North Atlantic Conference in Newark, N. J., October 20 and 21, and the Southern Conference at Jackson, Miss., October 30 and 31. A feature of the programs of all these conferences will be informal round-table discussions led by experts in various lines. These discussions will make the conferences virtually institutes in instruction on methods and programs of antituberculosis work.

Wellcome Prizes.—The Henry S. Wellcome Prizes, offered through the Association of Military Surgeons, viz., first prize, a gold medal and $300, and second prize, a silver medal and $200, are open for competition to all present and former medical officers of the army, navy, Public Health Service, Organized Militia, U. S. Volunteers, Medical Reserve Corps of the army, navy and of the officers reserve corps of the U. S. Army. These prizes will not be awarded until after Dec. 15, 1916, the council of the association having voted to extend the time of entry of competing essays to that date, because so large a number of the members are now with the troops on the border. Several essays have already been received and a large additional number are expected to be entered for such honorable and valuable prizes. The subject for the first prize is "The Most Practicable Plan for the Organization, Training and Utilization of the Medical Officers of the Medical Reserve Corps, U. S. Army and Navy and of the Medical Officers of the Officers Reserve Corps, U. S. Army, in Peace and War." The subject of the second prize is "The Influence of the European War on the Transmission of the Infections of Diseases, with Special Reference to its Effect on Disease Conditions of the United States." Essays (five copies signed by nom de plume) not to exceed 20,000 words, exclusive of tables, must be addressed to the Secretary of the Association of Military Surgeons, U. S. Army Medical Museum, Washington, D. C.

OUR TROOPS ON THE BORDER

Writing Materials for Our Troops.—The American Red Cross has shipped to the Mexican border, for free distribution among the American soldiers, 80,000 sheets of writing paper, a like number of envelopes and 50,000 postal cards.

Red Cross Nurses Sent to Mexican Border.—To reinforce the Army Nurse Corps on the Mexican border the war department has obtained from the American Red Cross 125 graduate Red Cross enrolled nurses for assignment to camp and base hospitals distributed along the frontier from Nogales, Ariz., to Brownsville, Texas. Fifteen of these 125 are representatives of civil hospitals in which American Red Cross base hospital units have been organized. The nurses were selected by Miss Jane A. Delano, chairman of the National Committee on Red Cross Nursing Service, whose department has over 7,000 enrolled graduate nurses. While Colonel Kean has organized twenty-five base hospitals, only eight of these will be represented in this detail of 125 nurses.

FOREIGN

The American-Scandinavian Foundation.—Dr. Christen Lundsgaard left Copenhagen, September 21, for New York. He is the first Danish physician to receive an allowance from the Niels Poulsen American-Scandinavian Foundation. He will study at the Rockefeller Institute and later will travel and pursue research work at other institutions in the United States.

Death in the Profession Abroad.—Sir Thomas Lauder Brunton, M.B., C.M., Edinburgh, 1866; M.D., Edinburgh, 1868; M.R.C.P., London, 1870; F.R.C.P., London, 1876; aged 72; consulting physician to St. Bartholomew's Hospital, London; widely known as a writer and teacher of medicine; who was knighted in 1900 and made a baronet eight years later; a member of many scientific societies in Great Britain and on the continent, and the recipient of a number of honorary degrees; Gulstonian lecturer in 1877, and Croonian lecturer in 1889; died at his home, September 18.

WAR NOTES

Gifts for War Relief.—The New Year Book of the Carnegie Endowment for International Peace states that the United States has given to the sixty principal war relief societies $28,896,277, or about one twentieth of the amount spent by the allies alone for specific war munitions.

Ambulance Service in the Balkans.—The American Ambulance Field Service announces the formation of an ambulance section to serve with the allied army in the Balkans. The section will include thirty ambulances, together with a repair car, kitchen car, tents and other accessories.

American Red Cross Readmitted to Austria-Hungary.—It is announced that Austria-Hungary has decided to grant permission for the reestablishment of American Red Cross units in the dual monarchy which were withdrawn several months ago because of lack of funds for their maintenance.

Surgeon Wanted for Service in Serbia.—The Franco-Serbian Field Hospital of America, whose office is at 17 West Thirtieth Street, New York, expects to send a field hospital unit to Serbia this month. The unit will be established close to the front and will be practically a first aid dressing station. At present an equipment of twenty cots is planned, but this will be enlarged in the near future. A competent young surgeon is desired to take charge of this unit. He would be expected to make a contract for at least six months, and will receive a salary of $100 a month and traveling expenses.

Physicians for War Zone.—A large number of practitioners of Indianapolis, Lafayette, Richmond and Terre Haute, Ind., have endorsed the plan of the American Physicians' Expeditionary Society to send American physicians to care for the sick and wounded in the base hospitals of the warring countries, and also approve the plan to send a unit of physicians and nurses from Indiana. In connection with this plan a committee has been appointed to raise $16,000 to meet the expenses of organizing, equipping and maintaining for six months an Indiana unit to be selected by the society to care for the sick and wounded in base hospitals of Germany and Austria.——A unit of twelve physicians is expected to be ready to leave Philadelphia next month for the war front under the Physicians' Expeditionary Committee.——A unit of fifty physicians is being organized for war service with the entente allies in Europe.——A Red Cross unit has been organized in New York by Dr. Earl B. Downer, which will sail to Christiana, Norway, and then will proceed to Petrograd and to Caucasus.

LONDON LETTER

LONDON, Sept. 11, 1916.

The War

DEATH FROM SUBSTITUTES FOR SALVARSAN

Substitutes for salvarsan have been produced in this country since the war cut off the supply of the drug from Germany, as stated in a previous letter to THE JOURNAL. These substitutes have been carefully investigated by experiments on animals, and have been pronounced equal to salvarsan in safety by a Committee of Investigation appointed under the National Insurance Act. There seems no reason to doubt this conclusion, but unfortunately many fatalities have shown that salvarsan is not a safe drug. The following case shows that the same applies to its substitutes: A verdict of death from misadventure was returned at an inquest on a man aged 40, who died in Guy's Hospital. After a Wassermann test an injection of kharsivan, which is supposed to be identical with salvarsan, was given. When he was having the second injection he became excited, complained of headache, and subsequently became unconscious. Dr. Spilsbury, the pathologist, said that death was caused by coma, due to a cerebral affection, and accelerated by the injection of kharsivan, which, in his view, was as good as salvarsan. Opinions differed, however, as to whether neokharsivan was not better still. This new preparation which is coming onto the market contains a smaller percentage of arsenic. The coroner said this was the third case he had had in a period of over two years. The importance of this fact will be realized when one considers that his district is only a portion of London.

Anthrax in Shaving Brushes

A short time ago I reported in THE JOURNAL a number of cases of anthrax due to shaving brushes, the infection being traced to a cheap kind of brush on sale in a certain shop. The disease has again been caused by an infected shaving brush—this time, at Newcastle. Investigation of the case which occurred in that city incriminated a cheap horsehair shaving brush, one of a large consignment newly arrived from Japan. Immediate steps were taken by the health authorities to trace the infected brushes, and it is believed that practically all of them have been recovered. These brushes are described as having black japanned wooden handles and a thin brush of white hair. (They sell for about 4 cents each.) A large proportion of those confiscated showed the presence of anthrax germs. It was found that parcels of the brushes had been sent to various parts of the country, some fifty gross going to Newcastle. A warning was at once sent by the Local Government Board to the health officers in each of the towns that had received them.

The Organisation of the Nursing Profession

As long ago as 1887 the desirability of state registration of trained nurses was brought forward by the late Sir Andrew Clark, physician to the London Hospital. In 1895 the subject was taken up by the British Medical Association which unanimously adopted a resolution in favor of the project. This was endorsed by the Association in 1904 and again in 1906. In 1905 a Committee of the House of Commons reported in its favor. In 1907 a bill was passed in the House of Lords; but on account of opposition failed to pass in the House of Commons. After further struggles, a bill was introduced in the House of Commons in March, 1914, by a majority of 311 against 82. This bill provided for the appointment of a general council to form a register of nurses whose course of training and examinations it would regulate and supervise. The council would appoint examiners and inspectors, publish an annual register, and take proceedings against persons guilty of offenses under the act. It would also decide on the suspension or removal from the register of the name of any nurse for any breach of the rules, or for disgraceful conduct. It would have power to recognize hospitals or institutions as approved training schools for nurses. Besides the general register of women nurses, there was to be a supplementary register of asylum nurses. The bill also provided for the admission to the register of persons holding certificates of training from institutions approved by the council, or under the Local Government Board, or from the Admiralty or the Royal Army Medical Corps. Persons producing evidence satisfactory to the council of training or who had been three years in bona fide practice as a nurse or employed as a nurse in a naval or military hospital would also be eligible. The council was to consist of twenty-one persons; three appointed by the Privy

Council (one a woman), three physicians appointed by the Local Government Board (one for each division of the Kingdom), three physicians appointed by the British Medical Association (one resident in England, one in Scotland, and one in Ireland); one physician appointed by the Medico-Psychological Association, one physician appointed by the fever hospitals recognized as training schools, eight registered women nurses (to be elected as direct representatives by the nurses on the register), one registered physician or registered male nurse (to be elected as a direct representative of the registered male nurses), one registered mental nurse (to be elected as a direct representative of the registered mental nurses). The title of "registered nurse" would be protected, the bill providing penalties for its improper use. An early passage of the bill seemed assured. Then war broke out and all controversies attending the bill had to be dropped. However, this war has increased the demand for nurses tremendously and has rendered the question of organization more urgent. A scheme for voluntary organization has therefore been brought forward by the leaders of the nursing profession and by leading persons interested in the profession which has resulted in the founding of the College of Nursing in March of the present year. Its objects are to maintain a register of trained nurses, to establish a uniform curriculum of training, and to raise the standard of training. The college is managed by a council of not less than fifteen or more than thirty persons, two thirds of whom must be trained nurses.

PARIS LETTER

PARIS, Aug. 31, 1916.

The War

THE WAR AND CLINICAL THERMOMETERS

As a result of the report on the inexactitude of clinical thermometers, read by Mr. Woog at the sitting, June 27, the Académie de médecine appointed a commission to study the question. Mr. Grimbert, the reporter of this commission, believes that it is necessary to prohibit the sale of all thermometers the precision of which is not guaranteed by official control. The war having suppressed the importation from Germany, France depends for her supply on Switzerland, England and the United States, and there has been a considerable rise of price without a corresponding guarantee of precision. According to Mr. Woog, the central pharmacy of the army has been obliged to refuse as much as 80 per cent. of the shipments offered. The French manufacturers have assured the commission that they will soon be in a position to supply clinical thermometers at the same price as those obtained from Germany before the war, and that they are prepared to submit to official control. Furthermore, the director of tests at the Conservatoire des arts et métiers believes that it is feasible to reduce considerably the fee paid for testing thermometers.

THE BELGIAN SCHOOL FOR THE MUTILATED

Like France, Belgium considers it her duty to do what may be possible to permit war cripples to reoccupy a social position worthy of them. Thanks to the generosity of Baron Baeyens, his estate of Notre Dame de-la-Mer, situated at Port-Villeg, department of Eure, 7 kilometers from Vernon, has been placed at the disposition of Mr. de Broqueville for this purpose. In this way, the Belgian effort has not, like ours, been dispersed over a number of small schools, but concentrated in one adequate central institution. Situated on a plateau 150 meters above the valley of the Seine, the Belgian institute for the reeducation of professional cripples is composed of eighty separate constructions, built with double walls, like the English field hospitals. The buildings extend over an area of 17,000 square meters and shelter dormitories, administration buildings and workshops. At present 1,200 cripples are in residence. On their arrival, they are carefully examined and a record is drawn up stating their previous occupations and present functional abilities. An attempt is made to establish what particular kind of work suits them best. In order to learn one of the forty-eight trades taught in the institute, the pupils enter the workshops, which are twenty-five in number. They have electric and internal combustion engines and a perfect supply of tools. The whole system is organized on an industrial basis. Although it has only been established one year, the value of its production is 950,000 francs ($183,350). In addition to the workshops, there is an agricultural area for training purposes. The agricultural lands amount to 30 hectares. The standing crops at the present moment represent a value of 40,000 francs ($7,720), and the school has already taken such fruits and vegetables as are necessary for its own use. The poultry farming section has produced, since last March, 3,000 chicks. There is an apiary of more than thirty hives. Rabbit rearing is also followed with excellent results. Finally, the gardens which surround this little colony, serve for the teaching of horticulture.

NEW OCCUPATIONS FOR THE WOUNDED

The first session of the Auch-Beaulieu center for agricultural reeducation, founded by the general council of the department of Gers and the ministry of agriculture, has just come to its close. The object of this center is to readapt to rural life those who have been seriously wounded in the war and the results obtained have been entirely satisfactory. Each pupil, according to his physical and intellectual ability, has been trained for an agricultural specialty such as steward, farmer, gardener, dairyman, poultry farmer, bee farmer, repairer of agricultural machines, etc. Already the majority of pupils have obtained situations in accordance with their ability, which, in certain cases, are superior to those held before the war. A complete course of professional photography under the auspices of the syndicated photographers of France has just been established at the special school for cripples. Before the war the corporation of photographers was invaded by foreigners. At present there are a great many vacant posts in every district. This profession, which requires more taste than strength, is particularly adapted to cripples. The apprenticeship is comparatively short, which is an advantage for the wounded, who are anxious to be able to gain their own living.

Marriages

JAMES FRANCIS LAWLER, M.D., Beverly, Mass., to Miss Mary Gertrude Creedon, formerly of Southbridge, Mass., at Methuen, Mass., September 7.

JAMES SALMON WILKINSON, M.D., Germantown, Philadelphia, to Miss Gwendolyn M. Devoll of Philadelphia at Branchtown, September 11.

WASHINGTON MERSCHER, M.D., Germantown, Piladelphia, to Miss Theda S. Dengler of Germantown in Lebanon, Pa., September 2.

ARROL V. BRUMBAUGH, M.D., to Miss Edna Alice Mason, both of Milwaukee, Wis., at Beaver Dam, Wis., September 4.

PERCY BETTERMAN BATTEY, M.D., Independence, Iowa, to Miss Sara H. Hillary, at Council Bluffs, Iowa, September 7.

LEANDER ERNEST TREVETHAN, M.D., Vale, Tenn., to Miss Ada Lee Duncan of Hollow Rock, Tenn., September 10.

JOHN THEODORE KING, JR., M.D., Baltimore, to Miss Charlotte Markell Baker of Frederick, Md., September 14.

CARL DAVIS RENDER, M.D., to Miss Dorothy June Antis, both of Oak Park, Ill., in Milwaukee, November 1.

JAMES PENDLETON ERSKINE, M.D., New York, to Miss Jennie F. Brower of Utica, N. Y., September 14.

THOMAS GOODELL CHARLES, M.D., Beardstown, Ill., to Miss Nita Robertson of Virginia, Ill., September 12.

LOUIE JOHN BEYER, M.D., Little River, Kan., to Miss Gwendolyn Markle of Lyons, Kan., August 16.

RUDOLPH FREDERICK DECKER, M.D., Byron, Neb., to Miss Theodora Prohl of Mendota, Ill., September 20.

ABRAM SAMUEL TEPPER, M.D., to Miss Esther Nebenzahl, both of Far Rockaway, N. Y., September 11.

ANGELINE MILDRED LEMON, M.D., Cleveland, to Mr. Harold Faunce Dumbleton of Detroit, September 5.

BERNARD O. BENDEXSON, M.D., Beachwood, Wis., to Miss Olive Stoupe of Milwaukee, Wis., recently.

LAWRENCE D. ALEXANDER, JR., M.D., to Miss Lita Berry Lindey, both of New York, September 9.

ARTHUR CALDWELL GILLAM, M.D., to Miss Anna Suzanna Maurer, both of Chicago, September 14.

IRA THURMAN MANN, M.D., High Point, N. C., to Miss Bessie Marguerite Pitts, September 26.

CHARLES A. REED, M.D., to Mrs. June C. Dickey, both of Minneapolis, September 13.

JAMES R. LEWIS, M.D., Grinnell, Iowa, to Miss Harriet Kemp, at Denver, recently.

JOSEPH FRAENKEL, M.D., New York, to Mme. Ganna Walska, September 7.

Deaths

Henry Clay Baum, M.D., Syracuse, N. Y.; University of Michigan, Ann Arbor, 1883; aged 57; a Fellow of the American Medical Association; professor of dermatology and syphilology in the College of Medicine of Syracuse University; consulting dermatologist to the Onondaga Orphan Asylum; dermatologist and syphilologist to the Syracuse Hospital for Women and Children, St. Vincent's Orphan Asylum, House of Providence and Syracuse Free Dispensary; dermatologist to St. Joseph's Hospital; formerly major surgeon of the Second Infantry, N. G., N. Y.; died at his home in August.

Richard Mott Moore, M.D., Rochester, N. Y.; University of Buffalo, N. Y., 1878; aged 59; a Fellow of the American Medical Association; one of the foremost practitioners of Rochester; a member of the board of health of Rochester in 1893; for several years chairman of the Monroe County Milk Commission and once president of the Rochester Academy of Medicine; who had been ill for five years with a disease of the circulatory system which necessitated several operations, and finally amputation of the leg above the knee; died at his home, September 13, from angina pectoris.

William Keller, M.D., Princeton, Ill.; St. Louis College of Physicians and Surgeons, 1884; aged 73; formerly a Fellow of the American Medical Association; a member of the Illinois State Medical Society; a graduate of medicine in the University of Tübingen, Germany, about 1865; surgeon in the Prussian army during war between Germany and Austria; died at his home, September 7, from septic pneumonia, following a carbuncle of the leg.

Elijah Miller Reed, M.D., Baltimore; University of Maryland, Baltimore, 1864; aged 72; formerly a member of the Medical and Chirurgical Faculty of Maryland and professor of nervous diseases and medical jurisprudence in Maryland Medical College, Baltimore; at one time an officer of the Medical Corps of the army; died at his home, September 12, from cerebral hemorrhage.

William A. Brown, M.D., Monticello, Ark.; University of Tenn., 1869; aged 73; formerly a Fellow of the American Medical Association; a member and once vice president of the Arkansas Medical Society; president in 1914 of the Arkansas Fourth Councilor District Medical Society; a Confederate veteran; died at his home, September 6, from heart disease.

Leo Dinkelspiel, M.D., New York; College of Physicians and Surgeons in the City of New York, 1883; formerly a Fellow of the American Medical Association; captain in the medical corps of the Serbian army during the war with Bulgaria in 1884; died at the home of his sister in New Rochelle, N. Y., September 11, from cerebral hemorrhage.

John Joseph Thompson, M.D., Webster, Mass.; Jefferson Medical College, 1887; aged 56; a Fellow of the American Medical Association; town physician of Webster for fifteen years; chairman of the school committee for ten years and trustee of the public library for twenty years; died at his home, September 16, from cerebral hemorrhage.

Edgerton Clapp David, M.D., Picton, Ont.; University of Michigan, Ann Arbor, 1877; aged 66; for many years a practitioner of Bad Axe, Mich., and Buffalo; who has been an inmate of the Rockwood Asylum, Kingston, Ont., on account of mental disease, for eighteen years; died in that institution, April 20, from septic endocarditis.

Emma Albertina Walser Townsend, M.D., New Brighton, N. Y.; Women's Medical College of the New York Infirmary for Women and Children, New York, 1888; aged 51; who is said to have been the first woman intern in the New York Hospital; for several years a member of the local board of education; died at her home, September 13.

Albert James Mackay, M.D., Peacham, Vt.; University of Vermont, Burlington, 1897; aged 50; a Fellow of the American Medical Association; member of the legislature in 1915-1916; died Brightlook Hospital, St. Johnsbury, Vt., September 11, two days after an operation for intestinal disease.

John H. Wilson, M.D., Bethlehem, Pa.; University of Pennsylvania, Philadelphia, 1860; aged 80; a Fellow of the American Medical Association; surgeon of volunteers throughout the Civil War; one of the best known practitioners of the Lehigh Valley; died at his home, September 12.

Daniel Hennessey, M.D., Bangor, Me.; Geneva (N. Y.) Medical College, 1866; aged 79; a Fellow of the American Medical Association; a member of the surgical staff of the Aid-de-Camp Hospital on David's Island, N. Y., after the Civil War; died at his home, September 10.

Charles L. Hall, M.D., Mount Jackson, Va.; Washington University School of Medicine, Baltimore, 1876; aged 65; formerly a practitioner of Lost River, W. Va., and a member of the West Virginia House of Delegates from Hardy County; died at his home, September 5.

Enoch T. Jones, M.D., Hampton, Ark.; Memphis Hospital Medical College, Memphis, Tenn., 1901; aged 49; formerly a Fellow of the American Medical Association and once president of the Calhoun County (Ark.) Medical Society; died at his home, September 9.

James W. Dreyfus, M.D., Louisiana, Mo.; Washington University, St. Louis, 1877; aged 65; formerly a Fellow of the American Medical Association; a member of the Missouri State Medical Association; died at his home, August 19, from cerebral hemorrhage.

Francis S. Merriam Meyers, M.D., Mt. Vernon, N. Y.; Women's Medical College of the New York Infirmary, New York, 1894; aged 46; a member of the Medical Society of the State of New York; died at her home, September 14, from heart disease.

George Henry Turner, Jr., M.D., Hartland, Me.; Medical School of Maine, Brunswick, 1903; aged 38; formerly a member of the Maine Medical Association and a practitioner of Portland, died at his home, September 9, from acute gastritis.

Thomas Fitzgibbon, M.D., St. Francis, Wis.; Rush Medical College, 1882; aged 62; a Fellow of the American Medical Association; formerly professor of gynecology in the Milwaukee Medical College; died at his home, September 17.

Malcolm Eugene Douglass, M.D., Guilford, Md.; Hahnemann Medical College, Philadelphia, 1880; aged 69; formerly a practitioner of Dansville, Va.; died in his office, September 13, from heart disease.

Isaiah W. Willits, M.D., Bloomsburg, Pa.; Jefferson Medical College, 1875; aged 73; a member of the Medical Society of the State of Pennsylvania; died at his home, August 24, from heart disease.

Seth C. Felt, M.D., Long Beach, Calif.; Detroit College of Medicine, 1876; aged 77; a veteran of the Civil War; until 1903 a practitioner of New Boston, Mich.; died at his home, September 5.

Charles H. Whiting (license, Maryland); a practitioner for forty-nine years; a veteran of the Civil War; died in the University Hospital, Baltimore, September 11, from cerebral hemorrhage.

George Watson Stevenson, M.D., Cleveland; Western Reserve University, Cleveland, 1872; aged 69; a Fellow of the American Medical Association; died at his home, August 30.

John O. Guhman, M.D., St. Louis; Missouri Medical College, St. Louis, 1889; aged 46; a Fellow of the American Medical Association; died suddenly at his home, September 11.

Walter L. Davis, M.D., Cincinnati; Miami Medical College, Cincinnati, 1866; aged 72; for more than thirty years alienist of Hamilton County, Ohio; died at his home, September 8.

Robert G. Van Valzah, M.D., Springfield, Ore.; College of Physicians and Surgeons, Baltimore, 1885; aged 52; also a druggist; died at his home, September 5, from nephritis.

Charles A. Mattison, Conway, Ark. (license, Arkansas, 1903); aged 53; a colored practitioner of Faulkner County for twenty-five years; died at his home, September 9.

Charles R. Sheetz, M.D., Algona, Iowa; Rush Medical College, 1882; aged 65; also a druggist; died at his home, September 7, from disease of the prostate gland.

William B. Jones, Summerville, Ark. (license, Arkansas, 1903); aged 73; a practitioner of Calhoun County, Ark., since 1860; died at his home, September 9.

L. Love Crump, West Point, Miss. (license, Mississippi); aged 75; a Confederate veteran; died at his home, September 6, as the result of an accident.

Elisha Dyer Leffingwell, M.D., Oswego, N. Y.; Bellevue Hospital Medical College, 1877; aged 67; died at his home, September 11.

Nathan N. E. Wood, M.D., Chicago; Bennett Medical College, Chicago, 1878; aged 64; died at his home, September 15.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

THE THERAPEUTIC VALUE OF THE GLYCEROPHOSPHATES

Report of the Council on Pharmacy and Chemistry

The Council has adopted the following report and authorized its publication. W. A. PUCKNER, Secretary.

Glycerophosphates are the salts of glycerophosphoric acid, $H_3[C_3H_5(OH)_2]PO_4$. This acid is produced by the interaction of glycerin and phosphoric acid. In general, only sodium glycerophosphate, $Na_2[C_3H_5(OH)_2]PO_4+5½H_2O$, and calcium glycerophosphate, $Ca[C_3H_5(OH)_2]PO_4+H_2O$, are used in medicine, though the glycerophosphates of lithium, potassium, manganese, magnesium, iron, quinin and strychnin are claimed as constituents of proprietary preparations. At a time when certain disorders were assumed to be due to a deficiency of phosphorus in the nerve structure in the body, glycerophosphates were introduced as "nerve foods" and "tonics" on the theory that they would be assimilated more readily than hypophosphites or ordinary phosphates. What led to this assumption was the fact that the lecithins, which form a part of the nerve structure, were known to contain the glycerophosphate radical in the molecule. The belief that inorganic phosphates cannot supply the body's need of phosphorus is implied or expressed in most of the "literature" devoted to proprietary phosphorus preparations.

Thus, Schering and Glatz quote G. Meillière as saying that "the organism is incapable of assimilating inorganic forms of phosphorus."

Again, when exploiters of glycerophosphates admit that the body can synthesize its phosphorus compounds from inorganic phosphates, they attempt to counterbalance the admission by contending that the use of organic compounds "spares" the system the necessity of making such synthesis. This assumption rests on the theory that the organic phosphorus compounds are absorbed and stored as such.

This theory is contradicted by evidence which has been presented[1] that the organic phosphorus compounds are split up into inorganic phosphates before absorption.

The Council requested E. K. Marshall, Jr., to review the evidence for and against the therapeutic value of organic phosphorus compounds. Marshall's study[2] brings out the following points:

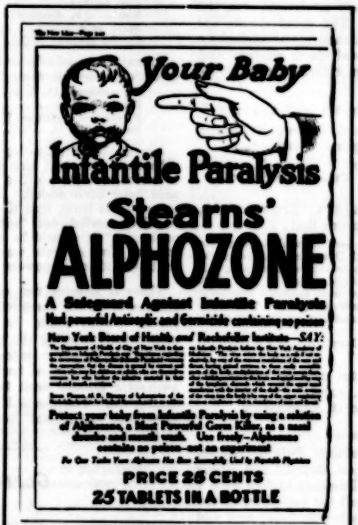
1. In various tissues of the animal body, enzymes have been found which hydrolyze complex organic phosphorus compounds so as to liberate the phosphorus in the form of inorganic phosphates.

2. Metabolism studies of the phosphorus balance with diets containing inorganic phosphorus compounds, as compared with diets containing organically bound phosphorus, are somewhat conflicting in their results. The balance of evidence, however, is in favor of the view that there is no difference between organically combined phosphorus and inorganic salts with respect to the phosphorus balance.

3. Experiments indicate that the organism thrives on and supplies its phosphorus needs quite as well from inorganic phosphorus compounds as from organically bound phosphorus.

Marshall concludes:

"We see that the evidence is very convincing of the view that the animal organism can synthesize its complex organic phosphorus constituents from inorganic phosphates, and that organic phosphorus is of no more value as a food than inorganic."


Your Baby
Infantile Paralysis
Stearns'
ALPHOZONE
A Safeguard Against Infantile Paralysis
New York Board of Health and Rockefeller Institute—SAY:
Protect your baby from Infantile Paralysis by using a solution of Alphozone, a Most Powerful Germ Killer, as a nasal douche and mouth wash. Use freely—Alphozone contains no poison—not an experiment
PRICE 25 CENTS
25 TABLETS IN A BOTTLE

This is a photographic reproduction (greatly reduced) of a full page advertisement from a house organ put out by Frederick Stearns & Company, Detroit, Mich. Make your own comment.

In view of this report, the Council deemed it advisable to take up the consideration of certain glycerophosphate preparations on the market. As the therapeutic claims are all similar, it is not necessary to quote them extensively.

TONOLS (SCHERING'S GLYCEROPHOSPHATES)

Tonols (Schering and Glatz, New York) comprise iron, lime, lithium, magnesium, manganese, potassium, quinin, sodium and strychnin "Tonols" or glycerophosphates; also Duotonol Tablets, said to contain equal parts of calcium and sodium glycerophosphates; Triotonol Tablets, each said to contain "Sodium Tonol 2½ grains, Lime-Tonol 2½ grains, Strychnine-Tonol 1/60 grain"; Quartonol Tablets, said to contain "Sodium and Lime-Tonols, each 2¼ grains, Quinine Tonol ½ grain, Strychnine-Tonol 1/200 grain"; Sextonol Tablets, said to contain "Sodium and Lime-Tonols, each 2 grains, Iron-Tonol, ½ grain, Manganese and Quinine-Tonols, each ¼ grain, Strychnine-Tonol, 1/200 grain."

The name "Tonols" is objectionable in that it is not only nondescriptive of the composition but also therapeutically (and falsely) suggestive. The composition of the more elaborate Tonols is particularly unscientific; there is no justification for combining quinin, strychnin, iron, manganese, etc., in one formula.

PHOSPHORCIN COMPOUND

Phosphorcin Compound, called "The Elementary Phosphorus indicated in all forms of Nervous Diseases" and the "Perfect Formula," is said to be manufactured by the Organic Products Company, Wetzlar an der Lahn, Germany, and Greenwich, Conn. It is sold in the United States by Eimer and Amend, New York, according to whom:

"Each two fluidrachms contain:		
"Acidulated Bone Phosphor O. P. Co.	2	grains
"Calcium Glycerinophosphate, Merck & Co.	1½	grains
"Magnesium Glycerinophosphate, Merck & Co.	1½	grains
"Sodium Glycerinophosphate, Merck & Co.	2½	grains
"Lactated Pepsin	2	grains
"Ignatia Extract	1/30	grain
"C. P. Glycerin (Special Process) O. P. Co.	50%	

"Acidulated bone phosphor" presumably is acid phosphate of calcium. This formula is an unscientific shotgun combination.

1. McCollum and Hart, Grosser and Husler, Plimmer, and Bayliss and Plimmer, quoted by Marshall (Note 2).
2. Marshall, E. K.: The Therapeutic Value of Organic Phosphorus Compounds, THE JOURNAL A. M. A., Feb. 13, 1915, p. 573.

ROBINOL

Robinol, manufactured by John Wyeth and Brother, Philadelphia, is called a "Universal Tonic." It is said to be:

"A preparation of the glycerophosphates of lithium, calcium, sodium, iron, manganese, quinine, with 1-16 gr. strychnine glycerophosphate in each fluidounce."

This is a semisecret preparation, since the quantities of most of the ingredients are not given and the vehicle is not named. This complex combination, too, is unwarranted.

PHOSPHOGLYCERATE OF LIME (CHAPOTEAUT)

This is said to be prepared by the Laboratoires de Pharmacologie Générale, Dr. Ph. Chapelle, Paris and New York. It is sold in this country by E. Fougera and Co., Inc., New York. It is offered in several forms, especially in that of wine, which is called the "Medicinal Wine and Tonic Par Excellence." The alcohol is no doubt the constituent to which this preparation is indebted for such popularity as it has attained, for it is much more freely advertised than the syrup, capsules or granulated form. The usual claims are made with regard to the efficacy of calcium glycerophosphate "during convalescence, in cases of enfeebled vitality, and nervous affections associated with an excessive elimination of phosphates."

ELIXIR GLYCEROPHOSPHATES, NUX VOMICA AND DAMIANA

This is manufactured by Sharp and Dohme, Baltimore. The manufacturers' statement of composition is:

"Each fluidounce represents Nux Vomica 8 grains, Damiana 64 grains, combined with Glycerophosphates of Calcium and Sodium."
"Alcohol 20 per cent."

Sharp and Dohme call this mixture a "Reconstructive, Nerve Stimulant, Aphrodisiac," and claim that:

"Phosphorus in elemental form has long been prescribed under the title of Elixir Phosphorus, Nux Vomica and Damiana, but due to the rapidity of chemical change occurring in preparations containing this form of Phosphorus, much of the Physiologic action is lost. The Glycerophosphates present Phosphorus in its most available form—the form in which it exists in the brain and nervous system. They powerfully stimulate the functions of nutrition and are rapidly assimilated by the system.
"Nux Vomica is a general Nerve Tonic. Damiana exerts a stimulant effect upon the sexual appetite and function."

The claim that the glycerophosphates may be substituted for elementary phosphorus is, at least, novel.

The elixir is an unscientific semisecret combination.

RECOMMENDATIONS

All of the preparations mentioned violate Rule 6 (unwarranted therapeutic claims). In addition, Robinol and Elixir Glycerophosphates, Nux Vomica and Damiana violate Rule 1 (secrecy of composition) in that not all the quantities of the ingredients are declared; Tonols, Phosphorcin Compound and Robinol violate Rule 8 (objectionable names). It is recommended that the Council endorse Marshall's findings[1] and declare that Tonols (Schering and Glatz), Phosphorcin Compound (Eimer and Amend), Robinol (John Wyeth and Brother), Phosphoglycerate of Lime Chapoteaut (E. Fougera and Co.), and Elixir Glycerophosphates, Nux Vomica and Damiana (Sharp and Dohme) are ineligible for New and Nonofficial Remedies.

KORA-KONIA

Report of the Council on Pharmacy and Chemistry

Kora-Konia is a "dusting powder" which at present is advertised to the medical profession through medical journals, circulars, post cards and sample packages. It is put out by the "House of Mennen," which sells various toilet preparations such as talcum powder, shaving soap, etc. On the trade package is the statement:

"Indicated in the treatment of Acne, Dermatitis, Eczema Intertrigo; in obstinate cases of chafing, prickly heat, nettle rash, chicken pox, measles, scarlatina and irritations of the skin; as a soothing absorbent and antiseptic dusting powder and as an umbilical dressing."

While a circular asserts that:

"Kora-konia is indicated in the treatment of acne, dermatitis, eczema and eczematous conditions of the utmost severity, . . . eruptive fevers, . . ."

What purports to be a physician's testimonial reads:

"I used Kora-Konia in a new born case of inherited syphilis and the eruption soon cleared up."

Germicidal powers are claimed for Kora-Konia in a medical journal advertisement. In view of the various claims made and the fact that it is advertised to the medical profession, the Chemical Laboratory of the American Medical Association was asked to analyze Kora-Konia. This was done and the chemists reported as follows:

LABORATORY REPORT

Kora-Konia is a white powder, slightly greasy to the touch. Qualitative tests showed the presence of boric acid, zinc, magnesium, a solid fatty acid and material insoluble in hydrochloric acid containing magnesium and aluminum. Starch was not found. Quantitative determinations gave the following results:

Acid-insoluble material (talc)	48.3 per cent.
Magnesium (Mg^{++}) soluble in dilute acid	1.2 per cent.
Zinc (Zn^{++})	4.5 per cent.
Stearic acid (impure)	39.2 per cent.
Boric acid	3.0 per cent.
Carbon dioxide (CO_2)	1.5 per cent.

From this analysis it is concluded that Kora-Konia has essentially the following composition:

Zinc stearate U. S. P.	44 per cent.
Talc	48 per cent.
Magnesium carbonate U. S. P.	5.0 per cent.
Boric acid	3.0 per cent.

Essentially this dusting powder consists of the well-known substances talc and zinc stearate in about equal proportions to which small quantities of magnesium carbonate and boric acid have been added. Inasmuch as the claim is made, by inference at least, that Kora-Konia represents original investigation carried out "with the cooperation of the medical profession" it should be stated that the preparation of commercial zinc stearate was described and recommended as a dusting and toilet powder nearly twenty-five years ago.[1]

There is nothing new or original in any one of these substances or in the combination. The extravagant and unwarranted claims made for this simple dusting powder are undoubtedly leading the public, as well as some thoughtless physicians, to place undeserved confidence in it. In view of the small amount of boric acid present in the powder, its antiseptic powers must be slight and its germicidal powers almost nil. The Council declared Kora-Konia ineligible for New and Nonofficial Remedies and authorized publication of this report.

Correspondence

Curtailment of Official Reports by Great Britain

To the Editor:—I am sure that your readers will share the conviction that a serious error is being made in the British policy of retrenchment in public expenditures according to which "on account of the war and the desirability of curtailing expenses on public administration as far as prudently can be done, the local government board has recommended that no reports be printed this year by medical officers of health and sanitary inspectors." This extract is from a letter from one of the foremost health officers in England, and indicates a direction of public policy which may tend seriously to impair the admirable efficiency of the public health service of the United Kingdom.

Of interest in this connection is the following brief extract from the annual report of the acting medical officer of health of the Borough of Royal Leamington Spa: "The local government board has suggested that the annual report for 1915 should deal only with the events of the year and also that it need not be printed. Acting on the latter suggestion your committee has decided that such copies of the report as are required by law should be typewritten, and that it should not be printed for general distribution as in former years."

Unquestionably the curtailment of official reports is a matter of considerable practical importance and perhaps

1. Proceedings A. Ph. A., 1892, Vol. 40, p. 488.

imperative in view of the heavy and increasing military expenditures; but no existing conditions can justify the complete cessation of the issuance of official reports, particularly on public health activities, where the facts of recent experience, unless promptly brought to public attention, are merely of historical value.

As another recent illustration of this regrettable direction of English public policy, reference may be made to the material reduction in the contents of the annual report of the Metropolitan Asylum Board, which constitutes by far one of the most useful sources of information on the results of the institutional treatment of contagious and infectious diseases.

FREDERICK L. HOFFMAN, Newark, N. J.
Statistician, Prudential Insurance Company of America.

Glyco-Thymoline and Poliomyelitis

To the Editor:—Referring to your article on "Glyco-Thymoline and Poliomyelitis" (Propaganda, THE JOURNAL, Sept. 16, 1916, p. 895). This summer I have treated perhaps fifty people for infected middle-ear, and for nasal sinusitis, caused by douching the nose with so-called antiseptics, to ward off poliomyelitis. Some years ago I treated a girl who was employed in the office of the Glyco-Thymoline people, Kress and Owen, for mastoiditis, presumably caused by the too liberal use of the nasal wash which she obtained for nothing. I am constantly writing and preaching against the use of nasal washes, but unfortunately most physicians are swayed by the persistency with which the various nasal wash people offer their wares. The nasal douche is decidedly more harmful than useful.

ALBERT BARDES, M.D., New York.
Otologist, Flushing Hospital.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

THE OCULOCARDIAC REFLEX

To the Editor:—Please answer the following questions:
1. Who first described the oculocardiac reflex?
2. Will you give a brief description of the reflex?
3. Will you give some references to the literature on the subject?

CLARENCE W. LIEB, M.D., Watkins Glen, N. Y.

ANSWER.—1. This was first described by Aschner in 1908, and is therefore sometimes spoken of as the Aschner reflex.

2. The oculocardiac reflex is a change in the heart's rate of rhythm following pressure on one or both eyeballs. The path of the reflex is generally considered to be along the fifth cranial nerve, the medulla and the vagus or more rarely the sympathetic nerves. Usually slowing of the pulse rate results. This is probably due to inhibitory stimulation along the vagus nerve, and individuals showing this slowing are spoken of as vagotonics. Rarely there is an increase in the pulse rate. It is believed that in these cases the impulse passes along the sympathetic. Such persons are described as sympathicotonics. It is generally considered that in normal persons the cardiac rate is slowed from four to ten beats a minute. The diagnostic value of this reflex is not as yet definitely determined. There is some evidence to show that this sign may enable one to differentiate between disease of the heart muscle and disease of the cardiac nervous mechanism.

3. The following are some references:

Aschner: *Wien. klin. Wchnschr.*, 1908, xxi, 1529.
Gunson, E. B.: The Oculo-Cardiac Reflex, *Brit. Jour. Children's Dis.*, April, 1915; abstr., THE JOURNAL, May 15, 1915, p. 1685.
Aviragnet, Dorlencourt and Bouttier: *Compt. rend. Soc. de biol.*, 1914, lxxvi, p. 771.
Guillain and Dubois: *Bull. et mém. Soc. méd. d. hôp. de Paris*, 1914, xxxvii, 584.
Lesieur, Vernet, and Petzetakis: *Bull. et mém. Soc. méd. d. hôp. de Paris*, 1914, xxxvii, 440, 446, 593, 599.
Lesieur, Vernet and Petzetakis: *Bull. et mém. Soc. méd. d. hôp. de Paris*, 1914, xxxvii, 515.
Monier-Vinard and Meaux-Saint-Marc: *Bull. et mém. Soc. méd. d. hôp. de Paris*, 1914, xxxvii, 614.
Petzetakis: *Bull. et mém. Soc. méd. d. hôp. de Paris*, 1914, xxxvii, 562.
Petzetakis: *Bull. et mém. Soc. méd. d. hôp. de Paris*, 1914, xxxvii, 727.
Levine, S. A.: Oculocardiac Reflex, Arch. Int. Med., 1915, xv, 758; abstr., THE JOURNAL, June 12, 1915, p. 2017.
Lian, C.: Therapeutic Utilization of the Eyeball-Heart Reflex, *Arch. d. mal. du coeur*, July, 1915; abst., THE JOURNAL, Aug. 21, 1915, p. 745.
Ferralis, G. B., and Pezzi, C.: When the Oculo-Cardiac Reflex Induces Extrasystoles, *Policlinico*, Rome, May, 1916; abstr., THE JOURNAL, June 24, 1916, p. 2129.

LIQUOR ALUMINI ACETATIS (BUROW'S SOLUTION)

To the Editor:—THE JOURNAL (Sept. 9, 1916, p. 829) contains your answer to the question of Dr. Patterson on the composition of Burow's solution. It occurred to me that it might have been well to emphasize the recommendation that Burow's solution be *not* made with lead acetate, as was formerly customary. The presence of lead is not required, as the virtue in the preparation is in the acetic acid, which is constantly liberated in the wet dressing, as the strong odor of this substance after long application indicates. Lead, therefore, has been omitted in later editions of the National Formulary. The danger of lead in Burow's solution, namely, absorption of lead, was pointed out in a case report by Gottheil (THE JOURNAL, March 26, 1910, p. 1056). The use of acetic acid as a wet dressing must be of ancient origin, as its use is immortalized in the nursery rhyme of "Jack and Jill." After "Jack fell down, and broke his crown," you will remember he was put to bed with a bead dressing of "vinegar and brown paper."

JOSEPH S. LEWIS, M.D., Buffalo.

ANSWER.—Burow's solution is official in the latest (fourth edition) of the National Formulary under the title "Liquor Alumini Acetatis." It is prepared by treating 150 gm. of lead acetate with 85 gm. of aluminum sulphate made up to 1,000 c.c. If the solution is properly made according to the directions given, it should contain very little lead, if any at all; the lead sulphate formed is practically insoluble, and a calculated excess of aluminum sulphate is employed in order to insure the conversion of all of the lead to lead sulphate. As the solution is now official, there should be but slight danger from lead poisoning following its use. The virtue of the aluminum acetate treatment does not reside wholly in the liberated acetic acid. If this were true, acetic acid alone would be as efficacious as the liquor alumini acetatis, which is not, however, the case.

DIGITALIN

To the Editor:—About six years ago an article in THE JOURNAL compared pure digitalin given hypodermically with the physiologic effect of the tincture. As I recollect, the article stated that ½ grain digitalin was equivalent to about 10 minims of the tincture. Will you tell me what is considered the proper adult dose of the preparation known as Digitalin, Pure German? The physicians in this part of the country consider ⅟₁₀ grain a large dose, and I have been criticized for using ⅟₁₀ grain, a dose which I have used for five years, always with satisfactory results.

E. C. DAY, M.D., Laguna Beach, Calif.

ANSWER.—Digitalin German is described in New and Non-official Remedies, 1916, page 99. It says: "What has been said of the uncertainty of dosage of true digitalin must obviously apply with even greater force to 'German' digitalin, since the activity of the latter probably depends mainly on the contained true digitalin. The dose of 'German' digitalin was formerly given as 0.001 to 0.002 gm. (1/60 to 1/30 grain) maximum dose 0.004 gm. (1/16 grain); with a maximum per day of 0.02 gm. (⅓ grain). Many clinicians, however, have used very much larger doses without ill effects, and the relative activity of certain specimens of the 'German' digitalin and other members of the group would seem to indicate that such specimens of 'German' digitalin might be given safely in daily doses of a grain or possibly more."

Inspiration of the Teacher.—Immortality is a theme on which human thought has exhausted itself without absolute and universal conviction because it takes the human mind beyond its depth at the first long stride forward. But there is one phase of immortality about which we can all be assured. The mind of today can, through the minds of tomorrow, project itself into immortality. Ideas and ideals travel through generations of minds to eternity. It will ever be the inspiration of the teacher that to him in particular comes this great opportunity to be a part of the future, by molding and guiding and training the minds of the present.—R. L. Wilbur.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, Oct. 3-4. Sec., Dr. John Wix Thomas, 306 Goodrich Bldg., Phoenix.

CALIFORNIA: Los Angeles, Oct. 3. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.

COLORADO: Denver, Oct. 3. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Oct. 10-12. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

FLORIDA: Homeopathic, Jacksonville, Nov. 10. Sec., Dr. J. B. Griffin, St. Augustine.

GEORGIA: Atlanta, Oct. 10-12. Sec., Dr. C. T. Nolan, Marietta.

IDAHO: Wallace, Oct. 3. Sec., Dr. Charles A. Dettman, Burke.

ILLINOIS: Chicago, Oct. 10-12. Sec., Dr. C. St. Clair Drake, Springfield.

IOWA: Des Moines, Oct. 17-19. Sec., Dr. Guilford H. Sumner, State House, Des Moines.

KANSAS: Topeka, Oct. 10-12. Sec., Dr. H. A. Dykes, Lebanon.

MICHIGAN: Lansing, Oct. 10-12. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: Minneapolis, Oct. 3-6. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

MISSISSIPPI: Jackson, Oct. 24-25. Sec., Dr. J. D. Gilleylen, Jackson.

MONTANA: Helena, Oct. 3. Sec., Dr. William C. Riddell, Helena.

NEVADA: Carson City, Nov. 6. Sec., Dr. S. L. Lee, Carson City.

NEW JERSEY: Trenton, Oct. 17-18. Sec., Dr. Alexander MacAlister, 438 E. State St., Trenton.

NEW MEXICO: Santa Fé, Oct. 9. Sec., Dr. W. E. Kaser, East Las Vegas.

OKLAHOMA: Oklahoma City, Oct. 10-11. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

PORTO RICO: San Juan, Oct. 3. Sec., Dr. Quevedo Baez, San Juan.

RHODE ISLAND: Providence, Oct. 5-6. Sec., Dr. Gardner T. Swarts, 313, State House, Providence.

WYOMING: Laramie, Oct. 3-5. Sec., Dr. H. E. McCollum, Laramie.

Minnesota April Report

Dr. Thomas S. McDavitt, secretary of the Minnesota State Board of Medical Examiners, reports the oral, practical and written examination held at Minneapolis, April 4-6, 1916. The total number of subjects examined in was 16; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 3, all of whom passed. Sixteen candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Rush Medical College	(1915) 88.7;	(1916)	87
Woman's Medical College of Pennsylvania		(1909)	92

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Columbian University		(1903)	Dist. Colum.
Chicago College of Medicine and Surgery		(1914)	Iowa
Hahnemann Medical College and Hospital, Chicago		(1910)	Illinois
Illinois Medical College		(1902)	Texas
Northwestern University		(1911)	Illinois
Rush Medical College		(1902)	Illinois
University of Illinois		(1914)	Illinois
State University of Iowa, College of Medicine		(1908)	Iowa
University of Michigan Medical School		(1904)	Iowa
St. Louis College of Physicians and Surgeons		(1902)	Wisconsin
John A. Creighton Medical College		(1915)	Nebraska
University of Nebraska		(1911)	Nebraska
Medico-Chirurgical College of Philadelphia		(1898)	New Jersey
University of Virginia		(1906)	Virginia
Queen's University		(1898)	N. Dakota
Western University		(1905)	New Jersey

Mississippi June Report

Dr. J. D. Gilleylen, secretary of the Mississippi State Board of Health, reports the written examination held at Jackson, June 20-21, 1916. The total number of subjects examined in was 8; total number of questions asked, 64; percentage required to pass, 75. The total number of candidates examined was 55, of whom 30 passed, including 1 osteopath, and 25 failed. Three candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Atlanta Medical College		(1916)	77.5
Loyola University		(1916)	76
University of Illinois		(1916)	80
University of Louisville		(1916)	83
Tulane University of Louisiana		(1916)	76, 78.7
Jefferson Medical College		(1916)	77.5
University of Nashville		(1906)	80
University of Tennessee	(1916) 75, 75, 75, 75, 75.5, 76, 78, 79, 80.5, 81, 82, 85, 88.6		77, 78,
Vanderbilt University		(1916)	79, 82.6, 84.5, 85.5
University of Virginia		(1916)	81, 83

College	FAILED	Year Grad.	Per Cent.
Birmingham Medical College		(1915)	54, 70
University of Alabama		(1907)	69
College of Physicians and Surgeons, Little Rock		(1910)	29
Howard University		(1914)	51
Atlanta Medical College		(1916)	63, 70
University of Louisville		(1916)	70
Tulane University of Louisiana	(1915) 68.5;	(1916)	63, 69
Missisippi Medical College		(1911)	36
Lincoln Memorial University		(1916)	71
Meharry Med. Coll.	(1912) 35; (1913) 55; (1915) 71;	(1916)	64, 68
University of Tennessee	(1916) 44, 62.8, 64, 64.5, 65,		68, 70

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Bennett Medical College		(1911)	Kansas
Chicago Medical College		(1882)	Wisconsin
National University of Arts and Sciences		(1914)	Missouri

Rhode Island July Report

Dr. Gardner T. Swarts, secretary of the Rhode Island State Board of Health, reports the practical and written examination held at Providence, July 6-7, 1916. The total number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 80. The total number of candidates examined was 13, of whom 10 passed and 3 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Yale University		(1914)	86.3
Harvard University		(1916)	87.7, 94.7
Tufts College Medical School	(1915) 83.2, 84.5; 86.7, 87.2	(1916)	83.8,
Jefferson Medical College		(1916)	81.1
University of Vermont		(1906)	84

College	FAILED	Year Grad.	Per Cent.
College of Physicians and Surgeons, Baltimore		(1910)	74.2
Tufts College Medical School		(1915)	64.2, 68.7

Book Notices

NURSING PROBLEMS AND OBLIGATIONS. By Sara E. Parsons, R.N., Superintendent of the Training School for Nurses, Massachusetts General Hospital, Boston. Cloth. Price, $1 net. Pp. 147. Boston: Whitcomb & Barrows, 1916.

In an interesting introduction, Dr. Richard C. Cabot states that he is in complete agreement with the principles set forth by Miss Parsons in this book. He agrees also with her opinions as to the standards of training schools for nurses. He says: "No one any longer supposes that a medical school can be both reputable and self-supporting. To maintain proper standards, it must be, and always is, endowed." He believes the same principles apply to nurses' training schools. The book represents a series of talks given to nurses in the Massachusetts General Hospital. Special sections are devoted to ethics, qualifications for executive work, specialized nursing, graduate nursing and miscellaneous topics. The book is in simple language, and is replete with anecdote and the record of personal experience. Many nurses' training schools would profit if the principles outlined in this text were incorporated into a course of ethics required of every student.

THE EXPECTANT MOTHER AND HER CHILD. CONTAINING THE ESSENTIAL THINGS THAT EVERY MOTHER AND WOMAN SHOULD KNOW. By Margaret J. Modeland, R.N. Introduction by Harold A. Miller, M.D., Obstetrician at the Allegheny General Hospital. Leather. Price, $1. Pp. 113, with illustrations. Philadelphia: John C. Winston Company, 1916.

The author presents, in an artistically prepared little book, the usual series of warnings and suggestions to expectant mothers. The book in general follows the lines usually found in books on the same subject. Some of the suggestions offered are, to put it mildly, not in accord with modern obstetrics and pediatrics: for example, that each baby receive an oil rub daily during the first six months of life; that the baby's back be rubbed to make it feel good; that quinin and castor oil be not taken, as they will produce abortion. So many books on this subject are now available that the market appears to be rather oversupplied. Perhaps it is now time to begin to eliminate books that are unfit, and to encourage those that merit approval.

Miscellany

AN ANATOMIC PRAYER

A Hymn Based on an Ancient Fragment of Osteology

C. D. SPIVAK, M.D.
DENVER

The following piyyut[1] is recited in Hebrew by all orthodox Jews at the Musaf[2] prayer on the second day of Rosh Hashanah, the Jewish religious New Year.[3] The following is a free translation into English:

THE ANATOMIC PRAYER

"O deign to hear the voice of those who glorify thee with all their members, according to the number of the two hundred and forty-eight affirmative precepts. In this month, they blow thirty sounds (on the *Shofar*, ramshorn) according to the thirty members of the soles of their feet; the additional offerings of the day are ten, according to the ten in their ankles; they approach the altar twice, according to their two legs; five men are called to read the law, according to the five joints in their knees; they observe the appointed time to sound the cornet, on the first day of the month according to the one member in their thigh; they sound the horn thrice, according to the three in their hips; lo, with the additional offering of the New Moon, they are eleven, according to their eleven ribs; they pour out the supplication with nine blessings, according to the members in their arms, and which contain thirty verses, according to the thirty in the palms of their hands; they daily repeat the prayer of eighteen blessings, according to the eighteen vertebrae in their spine; at the offering of the continual sacrifice, they sound nine times, according to the nine members in their head; in the two orisons they kneel eight times, according to the eight vertebrae of their neck; he hath ordained the six orders of the Mishnah, according to the six members in the breastbone; their statutes and laws are contained in five books, according to the five perforations; the reins, inward parts, soul, breath, spirit, skin, flesh, sinews and their bones,

"These shall all lift up the eye, and pierce the ear, and open the mouth, that with the tongue and speech of their lips, and from the sole of their foot to their head, may show the particulars of their good acts; so that when the sound of the *Shofar* ascends, their adversaries may be ashamed; that they may be justified on the day of judgment, and hear the second time from their God."

COMMENT

That one who is not familiar with Jewish traditions may be enabled to understand the rationale of such a prayer, and the causes which induced the author to blend anatomy, the "ungodly science," with a hallelujah, it is necessary to become familiar with the following historical facts which will serve as a background. It is to be borne in mind that all the laws and precepts laid down by Moses in the Pentateuch for the guidance of the Jews are called commandments, *Mitzvoth*.[4] The number of such commandments[5] is 613. The commandments are divided into prohibitive commandments, *Mitzvoth lo taaseh*, whose number is 365, and the mandatory commandments, *Mitzvoth aseh*, whose number is 248. Rabbi Simlai, a Palestinian haggadist[6] says: "Six hundred and thirteen commandments were revealed to Moses, 365 being prohibitive (negative), equal in number to the days of the year, and 248 being mandatory (affirmative), corresponding in number to the bones of the human body."[7] The enumeration and the division into prohibitive and mandatory commandments was undertaken by many Biblical and Talmudic scholars, and gave rise to endless disputes as to which of the passages in the Bible are to be recorded as commandments, and whether they belong to the prohibitive or to the mandatory group.[8] While the expounders and commentators were busily engaged in settling this controversy, each compiling a list of the commandments which differed from all the others, the stylists, grammarians and poets bestirred themselves and composed hymns whose central theme was the enumeration of the 613 commandments, all of which are known under the term *Azharoth*.[9] There is no doubt of their antiquity, as they are mentioned by the well known Gaon Saadia[10] and by the Bible commentator and grammarian Abraham ibn Ezrah,[11] who was conversant with the medical writings of his day, and who speaks in disparaging terms of their blunders in their enumeration, using a medical simile, "that the authors of *Azharoth* in general resemble a man who counts the various medicinal herbs mentioned in medical works without knowing anything of their virtues."[12] But none could accuse the author of the foregoing anatomic piyyut, Rabbi Eleazar Kalir,[13] of ignorance. He was one of the greatest hymn writers the Jews ever had, and the structure of his hymns remained a model which was followed for centuries after him, and indeed constituted what is known as the Kaliric school.

"ALL MY BONES SHALL SAY, 'LORD, WHO IS LIKE UNTO THEE?' "

Now, the Jewish religion, perhaps more than all others, abhors lip-prayer. The most sacred prayer of the Jews, a prayer which is recited three times a day and is on the lips of every dying Jew, is the Shema[14] which includes the following verses: "And thou shalt love the Lord thy God with all thine heart, with all thy soul and with all thy might." Prayer is considered an expression of love for the Deity. Hence, according to the Talmudist,[15] prayers must be recited in the manner of David the psalmist: "All my bones shall say, Lord, who is like unto thee?"[16] "David said, I praise thee with all the members of my body by performing with them your commandments. On my *head* I wear phylacteries at prayer."[17] I do not round the *corners of my head*.[18] On my *neck* I wear the fringes at which I look with my *eyes*.[19] My *mouth* speaketh the praise of the Lord.[20] My *lips* shall utter praise.[21] I do not round the corners of my *beard*.[22] With my *tongue* I speak thy righteousness.[23] Thy words have I hid in my *heart*.[24] With my *right hand* I copy the law, and on my *left hand* I bind the phylacteries."[25] I bless the Lord, my strength, who teacheth my *hands* to war.[26] My *feet* stand in an even place.[27] My *membrum virile* is circumcised.[28] With my *nails* I perform *Periah*,[29] my *reins* also instruct me in the law.[30] Thy law is within my *entrails*.[31] All that is within me blesses the Lord,[32] and, finally, all my bones shall say, 'Lord, who is like unto thee?' "[33]

The Talmudists with their heightened imagination, allowed themselves the poetic license of giving the words "my bones" the interpretation of a figure of speech, and therefore quoted many passages from psalms wherein parts of the body praise the Lord. But no bones are mentioned in the Psalms. In David's day the majority of the bones of the human body were an unknown quantity. There are mentioned in the

1. Piyyut (plural, Piyyutim), hymn added to the older liturgy of the Jews that developed during the Talmudic era and up to the seventh century. The piyyutim are recited on the holy days. The word piyyut is derived from the Greek term for poetry.
2. Musaf, additional prayer recited on holy days after the regular daily morning prayer, Shacharith.
3. The first day of the Jewish month of Tishre. It falls late in September or early in October.
4. The ten commandments are called by the Jews the ten words, the same as in Greek — decalog.
5. The Jews call the 613 commandments collectively by the word Taryag mitzvoth coined from the numerical value of the letters: T = 400, R = 200, Y = 10, G = 3.
6. Haggadah, the nonlegal part of the old rabbinic literature, contains homilies, narratives, stories, legends and references to or short essays on medicine, astrology, magic, theosophy, mathematics, etc.
7. Makkoth 23b.
8. The most distinguished compilers of the 316 commandments were: Kahira (ninth century) Saadiah (892-942), Gobirol (1021-1058), Maimonides (1125-1204) and Jacob of Coucy (thirteenth century). See Schechter, S.: Studies in Judaism, 1896, p. 248.
9. Azharoth, the name of a hymn of great antiquity which begins with the word Azharoth, the theme of which is the enumeration of the 613 commandments in rhymes. This hymn gave rise to hundreds of others which are known under the general name Azharoth.
10. Gaon Saadia, the founder of scientific Judaism, lived from 892 to 942.
11. Abraham ibn Ezrah lived from 1092 to 1167.
12. Yesod Moreh, Gate 2, end.
13. Rabbi Eleazar Kalir flourished during the eighth century. Zunz: Literaturgeschichte der Synagogale Poesie, Berlin, 1865. Landshuth: Amude ha-Abodah, Berlin, 1975, p. 32.
14. "Hear, O Israel, the Lord our God is one God." Deut. 2. 5.
15. Yalkut Shimoni 733. 16. Ps. 35. 10. 17. Ex. 13. 15. 78. Lev. 19. 27. 19. Num. 15. 38. 20. Ps. 165. 11. 21. Ps. 119. 171. 22. Lev. 19. 27. 23. Ps. 35. 28. 24. Ps. 119. 11. 25. Ps. 144. 11. 26. Ps. 26. 11. 27. Ex. 12. 48.
28. In the operation of circumcision, the operator, the mohel, after the excision has been completed, seizes the inner lining of the prepuce with thumb nail and index finger of each hand and tears it so that he can roll it fully back over the glans and expose the latter completely.
29. Ps. 17. 7. 30. Ps. 40. 9. 31. Ps. 103. 1.

Bible the names of a few bones, but it is uncertain whether they refer to the bone itself or to the outer form of the body which includes the bone. The word arm, forearm, shoulder, knee, elbow, hip, etc., may mean the bone or the part of the body including the bone and the soft parts.

THE ANCIENT FRAGMENT OF OSTEOLOGY

Rabbi Kalir, in composing an *Azhara*, a hymn on the 613 commandments, treated the subject from a poetic as well as from a scientific point of view. His poetry he derived from the sweet singer David: "All my bones shall say 'Lord, who is like unto thee?'"[32] His science he derived from the *Mishnah*,[33] in which is preserved an osteologic fragment which reads as follows:

Man has 248 bones divided as follows:

In the foot, *pissath ha-regel*	30
In the ankle, *kursai*	10
In the shin bone, *shok*	2
In knee joint, *arkubba*	5
In the thigh, *yarek*	1
In the hip bone, *kotlith*	3
Ribs, *tsloath*	11
In the hand *pissath-ha-yad*	30
In the forearm, *kanch*	2
In the elbow joint, *marpek*	2
In the arm, *zeroa*	1
In the shoulder, *kathef*	4
Number of bones on each side	101
Or on both sides	202
Vertebrae, *chulyoth*	18
In the head, *rosh*	9
In the neck, *tzavvar*	8
In the breast bone, *majteach ha-leb*	6
Around the openings (anus) *nekubbim*	6
Total	248[34]

There are a number of difficulties which we encounter. We are uncertain as to whether our translation of the osteologic fragment into modern nomenclature really corresponds to the nomenclature of those days. But no matter what the meaning of each word is, it is evident that the number of bones does not correspond with the modern findings. It would be a miracle if it were otherwise. When we examine the osteologic fragments in the works of Hippocrates[35] we find that the cranium is composed of only one bone, that there are only seven ribs and that the hand has *many* joints. From another fragment of Hippocrates[35] we learn that the hand has *27* bones, the foot 24, the neck 7, the hip 5, the back 20, the head, together with the eyebones, 8. The number of all the bones is 91, and with the nails 111. We see that Hippocrates recognized only half the number of the bones. Galen speaks guardedly of the number of bones and commits himself to an indefinite statement: "There are more than 200 bones in the human skeleton."[36]

THE INCENTIVE FOR THE STUDY OF ANATOMY BY THE HEBREWS

The discrepancy in the enumeration of the bones by the Talmudists may perhaps be explained by the method they used in the study of anatomy. They did not study anatomy as the foundation of the medical sciences.[37] All their scientific studies had as an incentive some religious precept or rite. The following is the origin of the anatomic studies of the ancient Hebrews:

According to the Mosaic law,[38] any one who comes in contact with a dead body or any part thereof or remains in a tent wherein a corpse is found is considered *tame*, infected, unclean, for seven days. The *Mishnah* teaches that this tent-infection, *Tumath-ohel*, takes place in the presence either of a complete corpse, or of an anatomic unit, an *eber*, member, that is, a bone covered with its soft parts. A bone stripped of its soft parts does not infect. Should, however, a collection of such bones by either their bulk or number constitute more than half of the skeleton, *sheled*, their infecting power is equal to that of a complete corpse. This law made it imperative that the number of bones of the human body be ascertained. The idea that there exists a complete analogy between the bodies of animals and men was generally discouraged by the Talmudists,[39] although in some cases the analogy was relied on.[40]

Direct observations, therefore, on the human body were resorted to, as, for instance, on the bodies of those killed on the battle field, on the wounded, the maimed, the drowned and on the bodies of those condemned to die. The Talmud relates the story, in the name of Mar Samuel,[41] that the disciples of Rabbi Ishmael[42] obtained the body of a harlot who had been executed, and having subjected it to prolonged boiling, *Shelikah*, and then counted the bones and found their number to be 252.[43] Neither of the numbers given agree with modern anatomic knowledge. It is probable that the author of the *Mishnah*, which gives the number of bones as 248, derived his knowledge from an investigation performed in a similar manner. The explanation of the discrepancy is probably to be found in the youthful age of the subject used, many of the bones not having been completely ossified. The prolonged boiling, on the other hand, caused the bones to be separated into their original component parts, so that the disciples of Rabbi Ishmael counted the epiphysis and diaphysis[44] as separate bones.

I venture to assert that there is not to be found in the liturgy of any religion, Christian or pagan, a prayer or hymn which, like this anatomic piyyut of Rabbi Kalir, represents undoubtedly a page of osteology from a chapter of anatomy which was taught 2,000 years ago, and in which the *leitmotif* is that "All my bones shall say, 'Lord, who is like unto thee?'"

Quacks of Today and Yesterday

As THE JOURNAL has repeatedly stated, the medical quack and the "patent medicine" vendor are ever ready to reap the profits of public fear in time of epidemic disease. The methods of the quack during an epidemic are described by Graham Everitt, in his book, Doctors and Doctors, London, 1888. He says:

"Of the quacks of the plague-year 1665, Defoe gives us a very vivid description, derived undoubtedly from the recollections of his father, and of those of his friends who remembered the visitation. He tells us how the posts of houses and the corners of streets were plastered with their bills announcing, "Infallible Preventive Pills against the plague; never-failing preservatives against the Infection; Sovereign Cordials against the corruption of the Air . . .; Antipestilential Pills . . .; the Royal antidote against all kinds of infection," and so on. Then he gives us the announcements of the illustrious professors themselves, "the eminent High Dutch Physician," from Holland; the "Italian Gentlewoman," who gave "her advice only to the female sex"; and the "Experienced Physician," who had devoted himself to the study of what he is pleased to term "the doctrine of antidotes." All these ignorant and impudent swindlers professed to have had special experience in cases of plague infection in foreign countries. One fellow "would pawn his life" (worthless as it was), that if the public took his "preparation," "they should never have the plague, no, though they lived in the house with people that were infected." Every one of these rascals soon disappeared; some supposed "they were all swept away in the infection to a man"; but Defoe imagines, with far greater probability, that "they fled into the country, and tried their practices upon the people there," who lived in daily apprehension of the infection.

32. Six treatises dating from the first century B. C. which are used as a text for all Talmudic discussions and commentaries.
33. Ohioloth 1. 8.
34. Hippocrates: De Locis in Homine.
35. Hippocrates: De Ossium Natura.
36. Galen: Deusu partium. Liber iii.
37. See C. D. Spivak in Jewish Encyclopedia, article Medicine in the Bible and Talmud, viii, 409.
38. Num. 19. 14.
39. Tosaf. Chullin 42b, Sebaim 116a.
40. Sanhedrin 78a.
41. Mar Samuel, Babylonian amore, teacher of the law, judge, astronomer and physician. Lived 165-257. Wunderbar in his monograph, Biblisch, Talmudische Medicin, Riga and Leipzig, 1850-1859, gives (in restes Heft p. 28) a list of the medical sayings and opinions of Mar Samuel.
42. Rabbi Ishmael, tanna of the first and second centuries.
43. Berachoth, 45a.
44. The following authors discuss the subject: Kazenelson, L.: Anatomiya normalnaya i patologicheskaya, St. Petersburg, 1889 (Russian). Rabbinowicz, Israel Michel: La médicine du Talmud, Paris, 1880. Kottelman, L.: Die Ophthalmologie bei den alten Hebraeern, Hamburg and Leipzig, 1910. Preuss, Julius: Biblisch- talmudische Medizin, Berlin, 1911.

Medicolegal

Grounds for Refusals to Carry Out Contracts to Marry

(In re Oldfield's Estate (Ia.), 156 N. W. R. 977)

The Supreme Court of Iowa holds that where a man on learning that he has pernicious anemia refuses to carry out an existing contract to marry, no damages can be recovered therefor. The court says that it takes from certain authorities, based as it thinks on sound reasoning: First. That one may repudiate an agreement to marry when, subsequent to the making of the contract, he becomes afflicted with a loathsome disease which, on the consummation of the marriage, may be communicated to the spouse and to the offspring born of such marriage. Second. When, after the making of the contract to marry, he becomes afflicted with a fatal and incurable malady, and the consummation of the marriage would hasten his death, he is not bound to perform by consummating the marriage, and therefore is not liable in damages for such failure. Or, in other words, that there is implied in every contract to marry that the parties will not endanger life or health in the consummation of the marriage, and that where illness or disease comes on one after making the contract to marry, such as would render marriage dangerous to his life, a breach of the contract, based on such unavoidable and such unanticipated condition, is excusable. The court does not mean by this that the danger should be simply problematic, or a possible contingency—one that may or may not be a resultant consequence of the act of consummating the marriage—but one in which the evidence renders reasonably certain the inevitable consequence of such an act. Where the malady is of such a fatal character that he cannot enter into the marriage relation and receive any of the benefits which grow out of, and are involved in, the relationship established by the consummation of the marriage, he is excused. Third. That where one is stricken, before the time arrives for the consummation of the marriage, with a fatal malady, and has but a few days or weeks or months to live, and the evidence makes this reasonably certain, he is excused from the consummation of the marriage, and, being excused, his estate, on his death, is not liable in damages for such failure. These are implied conditions in the agreement to marry, and the agreement to marry is voided by their happening; and, the agreement being void, no liability for damages results from the failure to perform. The first proposition rests on public policy, as well as on the conditions herein suggested. The consideration for every agreement to marry is found in the consummation of that agreement by marriage. Each has bargained to give and receive, on that day, all that is implied in the marriage relationship—all that grows out of the marriage relationship. If, by the act of God, before the time fixed for the consummation of the marriage, either party is rendered incapable of giving that which the contract calls for, the other party may repudiate the agreement to marry because of the failure, through the act of God, of the very consideration on which the promise rests. It may be that the very condition that renders him incapable of giving, renders him wholly incapable of receiving any of the consideration which, under the consummated contract, he is entitled to. The giving and receiving are mutual obligations. One is a condition for the other. If the woman may repudiate the contract because the man has become, by the act of God, in such a condition physically as to render him incapable of giving to her all that, under the consummated contract, she is entitled to, then the man may, the contract being mutual, refuse to perform when, by the act of God, he has become wholly incapable of receiving any of the consideration which the consummated contract entitles him to. One cannot give to another that which the other is wholly incapable of receiving. This court would hold, rather, that the consideration for the original agreement to marry has been destroyed by the act of God, and that, what is claimed to be a repudiation of the contract is simply a communication to the opposite party of the happening of an implied condition in the original contract which rendered the contract incapable of performance.

Evidence of Use of Mails to Defraud

(Samuels vs. United States (U. S.), 232 Fed. R. 536)

The United States Circuit Court of Appeals, Eighth Circuit, affirms a judgment of conviction of the defendant, who was charged with having used the mails to promote a scheme to defraud, in connection with which he advertised himself as "Professor H. Samuels," and the remedy exploited as "Prof. H. Samuels' Systematic Remedy." The court says, among other things, that there was no error in the admission in evidence of the advertisements of the defendant, published in many newspapers, paying to one advertising firm as much as $175,000 in one year for this advertising, nor in the admission of letters from various parties claiming to suffer from many different ailments—one from a broken nose, another from rupture, another from syphilis, one from goiter, one from a bullet wound in the thigh—and asking whether or not the remedy would cure them. To these letters he replied that from the testimonials in his possession other persons had been cured from such ailments by the use of his medicine. The medicine, as he described it in his circulars, was a clear liquid, and to be administered through the eyes, and would serve as a natural nerve vitalizer. In his replies to these letters, he explained that "the optic nerve is the only large nerve that comes to the surface, and the use of this medicine will affect every part of the body, thus causing the different organs of the body to perform their proper functions." It was urged that in the letters and advertisements the defendant claimed only what had been said or written to him by those who had used his preparation, and that therefore these representations were not his, but those of his patients. But the gist of the offense was, not what others thought, but whether he knew them to be false. Sending them out with knowledge that they were false, he made them his own. The fact that these letters, circulars and advertisements were not set out in the indictment did not prevent their admissibility, in a case of this nature. As the fraudulent intent was one of the material allegations in the indictment, evidence of other and similar ventures by the accused were properly admissible as bearing on the question of intent. The evidence was also admissible that the defendant was not a great scientist, a man of scientific education, and a man of letters and learning, as claimed in his advertisements, and which was charged in the indictment to be untrue. On the other hand, it was not error to refuse to admit in evidence a copy of the defendant's publication on the eye. At best it was merely a self-serving statement. If he wanted to prove that he was a great scientist by reason of having written and published that book, he should have introduced witnesses who were qualified to testify on that point. The jury was not the proper body to examine the book and determine from it whether he was a great scientist or not. Besides, no foundation had been laid to prove the real author of the book. He may have employed a scientist to write it and published it as his own work. The extravagant claims made for the preparation to cure almost all the diseases known, many of them of a nature which could be cured only by surgery; the undisputed fact that the preparation contained nothing but ordinary hydrant water of the city of Wichita, where it was prepared, with a little salt and sugar in it, the minute trace of boracic acid found in it being indigenous to the hydrant water of that city; the high price charged for it, at first $5 a bottle, afterward $3 a bottle, when the cost of its preparation was trifling; the testimony of physicians that it had no therapeutic value whatever—all these proofs certainly justified the submission of the case to the jury to determine whether the so-called medicine was merely a scheme to defraud, and that the mails had been used for the purpose of carrying it out. One of the important questions in issue was what the defendant knew to be the true facts, and not what others believed. If he knew that the medicine was not a cure for the many ailments claimed for it, and in fact for none, the fact that many of those who used it believed that it had cured them would be no defense. The evidence of his patients bore on his intent, and therefore was properly admitted; but it was for the jury to determine from all the evidence what his intention was, regardless of what some or all of his patients believed.

Society Proceedings

COMING MEETINGS

Am. Assn. for the Study and Prev. of Inf. Mort., Milwaukee, Oct. 19-21.
American Association of Railway Surgeons, Chicago, Oct. 17-19.
American Public Health Association, Cincinnati, Oct. 24-27.
Clinical Congress of Surgeons, Philadelphia, Oct. 23-28.
Delaware State Medical Society, Milford, Oct. 9-10.
Idaho State Medical Association, Twin Falls, Oct. 5-6.
Kentucky State Medical Association, Hopkinsville, Oct. 24-27.
Medical Association of the Southwest, Ft. Smith, Ark., Oct. 2-4.
Minnesota State Medical Association, Minneapolis, Oct. 11-13.
Mississippi Valley Medical Association, Indianapolis, Oct. 10-12.
Nevada State Medical Association, Reno, Oct. 10-12.
New England Surgical Society, Boston, Oct. 5-7.
New Mexico Medical Society, Albuquerque, Oct. 11-13.
Southern Medical Association, Atlanta, Nov. 13-16.
Vermont State Medical Society, St. Johnsbury, Oct. 12-13.
Virginia State Medical Society, Norfolk, Oct. 24-27.
Wisconsin State Medical Society, Madison, Oct. 4-6.

COLORADO STATE MEDICAL SOCIETY

Forty-Sixth Annual Session, held at Glenwood Springs, Sept. 5-7, 1916

(*Continued from page 975*)

President's Address: Abdominal Pain

Dr. John R. Espey, Trinidad: Each individual at some time experiences pain. It is the general experience of any lapse of normal health and is nearly always present in disease. I believe that while pain persists nature still hopes for a cure either spontaneously or by some action which she is trying to suggest. Peritoneal pain requiring operation and in which operation offers a reasonable hope of effecting a cure continues to be more or less agonizing; but how ominous a portent is it when that pain suddenly ceases without a removal of the cause. While there may be exceptions, the sudden stopping of pain in the presence of peritonitis is a precursor of dissolution. In the present era, any investigator noting a gastric pain would look carefully into the right iliac fossa in his search for a cause. He would also remember that a diseased gallbladder more frequently gives gastric symptoms than those strictly symptomatic of its own diseases. In the upper abdomen the palm of the hand will cover an area containing the pyloric region, the duodenum, the head of the pancreas, the gallbladder and common duct and the hilum of the right kidney. These organs are the seats of diseases that give rise to pain as a most prominent symptom. It is largely by the reflections and radiations of pain that we are given a clue to the organ affected. When pain and tenderness are observed in the abdomen below the umbilicus, we must consider the possibility of enteroptosis and that the pain may come from organs normally situated above the kidney, stomach or gallbladder; also that pelvic diseases of the urinary bladder, ovaries and extra-uterine pregnancy may develop upward. In cases of bilateral pain or tenderness in this region, ovarian and parametritic affections should be regarded in women and also conditions about the neighboring hernial openings.

Diagnosis of Menstrual Reflex Through the Tubes

Dr. J. N. Hall, Denver: A girl of 15 was admitted to St. Joseph's Hospital moribund, and seen at once by Dr. Leonard Freeman and myself. She had never menstruated. She was in collapse, with a slightly distended abdomen, with more or less uniform tenderness and rigidity, and a small amount of fluid in the abdomen. There was a history of cramping pain and vomiting, a rise of temperature to about 100 F., a very rapid and feeble pulse, pallor and collapse, with death after about forty-eight hours. The urine was not obtained. The chest was negative. The diffuseness of the abdominal signs, the lack of definite tenderness at the site of the appendix, the absence of a history of digestive symptoms, and the evidence of internal hemorrhage as shown by pallor, collapse, rapid, feeble, running pulse, and fluid in the abdomen led me to suggest to Dr. Freeman that it might well be a case of reflux from the fallopian tube in an attempt at menstruation, with obstruction which prevented the normal flow. At the postmortem examination we found the abdomen half filled with tarry blood, and the leaking tip of the tube was easily identified. The hymen was not imperforate, as we anticipated, but an obstructive elogure existed high in the vagina. The upper vagina, uterus and tubes were distended with blood of the same character as that in the abdomen. We were unable to say whether the obstruction was developmental or cicatricial in character, but in the absence of any history I believe it to have been of the former nature. In this case the infectious element predominated over the hemorrhagic one in the symptomatology.

Congenital Pyloric Stenosis

Dr. John F. Binnie, Kansas City, Mo.: The great symptoms of congenital hypertrophic pyloric stenosis are: 1. Explosive, expulsive vomiting with resultant emaciation. 2. Visible gastric peristalsis. 3. Persistent constipation. 4. Oliguria. 5. Tumor, not always palpable. Treatment by means of properly regulated diet and perhaps of antispasmodics usually promptly leads to disappearance of the symptoms. In doubtful cases roentgenology is valuable in diagnosis. Maylard, William Russell and others describe congenital pyloric stenosis in adults. Such stenoses are ringlike, uniform narrowings of the pylorus without any evidence of present or past inflammation and are discovered during exploratory gastrotomy for obscure gastric symptoms. If these surgeons are correct in their findings and interpretations, such stenoses are probably the sequellae of cured or unrecognized congenital hypertrophies.

Only in doubtful cases is it justifiable to attempt a cure by medicinal and dietetic means. Conscientious lavage may keep the stomach so empty that vomiting and peristalsis may cease to be symptoms and yet the patient be starving.

Gastro-enterostomy has been the favorite operation with most surgeons and has given excellent results. It has the advantage that its steps are much more familiar to the general surgeon than are those of the much more complicated classical pyloroplasty. As one eminent and experienced surgeon remarked to the writer, in gastro-enterostomy it is much easier to correct any mistakes one may make than in the other operation. Anterior gastro-enterostomy is supposed to be easier than posterior but has the evident disadvantage of a long loop of jejunum above the anastomosis and hence there is danger of obstruction by kinking due to the weight of biliary and pancreatic secretions, etc., in this loop pulling it down. This is the true cause of the so-called vicious circle. Posterior gastro-enterostomy, if performed by the no-loop method, has no such disadvantage and is not a difficult operation.

Botulism

Dr. George H. Curfman, Salida: Up to recent times the reports of outbreaks of botulism were confined to meat as a source of poisoning. For a century it has been understood that improper pickling or canning of meats was essential for the production of the disease. In the Darmstadt outbreak in 1904, in which the poisoning occurred in a cooking school, twenty-one became ill after eating bean salad. Of this number eleven died. Landmann believed that the *Bacillus botulinus* had been carried into the can along with some little piece of leftover meat, which might readily be found in any kitchen. It was also suggested that the spores of the organism was carried in on the beans from the fields. In this country all or nearly all the reported outbreaks have been due to canned goods. All of the reported outbreaks have occurred on the Pacific Coast, with the exception of one in Boston, in which the source of poisoning was thought to be minced chicken.

Meats, especially liable to botulinus infection, such as sausage, salt pork and preserved meats, should never be eaten uncooked. Meats presenting a rancid butyric acid-like odor should be destroyed. The brine used in corning meats should contain at least 10 per cent. of salt, as the organism cannot develop in such a solution. Particular attention should be paid to sausage casings, to see that they are free from fecal masses and that they have been carefully cleaned with some antiseptic solution prior to use.

Cystoscopy in the Insane: a Preliminary Report

DR. PHILIP WORK, Pueblo: The physical difficulties encountered in doing cystoscopic work among the insane are not as great as among the sane. The sensibilities are not so acute and the physical malformations are little, if any, more prominent. The mental attitude of the patient must be carefully determined beforehand, for it is inadvisable to cause undue mental excitement for the sake of a physical examination unless there is urgent indication for its performance. Permanent influences are apt to be unfavorable rather than favorable. It is impossible to formulate any data on bladder capacity. There is no vesical pathology except that of the organic disease or as a result of profound mental depression and the latter only from attendant mechanical causes. Treatment of the vesical pathology has a negligible effect on the majority of psychoses.

Fasting

DR. C. D. SPIVAK, Denver: With reference to rest in bed in severe cases I follow the method of Weir Mitchell to the letter. 1. Absolute rest in bed. Sitting is not allowed under any circumstances. The bed pan is used. 2. Diet. In many severe cases of gastro-intestinal disorders the best bill of fare is abstinence. One, two or even three days' fasting will do no harm in cases of ulcer, dyspepsia, and diarrhea of all kinds and varieties. Nutritive enemas can be employed in cases in which a longer period of fasting is necessary. When food by the mouth is allowed it must be given in small quantities, no matter whether liquid or solid, and at regular intervals. 3. Poultices. The poultices take the place of splints. They may make the patient feel comfortable and keep him warm and at rest. In severe cases the poultices are applied constantly during the day for one or two weeks, in milder cases from four to eight hours daily. Although I use all the three above-mentioned measures even to this day, I have changed my opinion regarding the relative importance of each and also changed the definition of rest as applied to the treatment of gastro-intestinal disorders.

From observations made by eminent men on professional fasters, on students, soldiers, and workingmen, and from my own limited observations on patients and on myself, it was found that the process of fasting is not combined with pain or distress. During the first day or two there is a craving for food at meal time and one is haunted by the ghosts of beef-steaks and turkeys. At the end of the second day or the beginning of the third day the desire for food may be entirely absent. Eventually a normal and healthy appetite comes and then the stomach and intestines are found in a condition to do their work efficiently.

Infections of the Seminal Vesicles

DR. WILLIAM M. SPITZER, Denver: The symptoms of spermatocystitis may be grouped under four headings—nervous, sexual, urinary and constitutional symptoms.

The nervous symptoms are melancholia, extreme mental depression and headache. In the extremely acute stage of spermatocystitis, usually occurring between the sixteenth and twenty-fifth day of an acute gonorrhea, the onset is characterized by frequency, tenesmus, burning and terminal bleeding, all due to the posterior urethritis in part, and oftentimes by inability to urinate. This retention demands catheterization. A rectal examination now discloses, either on one side or both, a large, bulging, hot prostatic mass, heretofore diagnosed as prostatic abscess. After a few days, as a rule, this abscess ruptures into the urethra, the rectum or the skin of the perineum, in the order named as to frequency. This is not a prostatic abscess, but is always a vesicular abscess, due to the closure of the ejaculatory ducts in the presence of pus in the vesicle, and is an extremely dangerous illness, resulting on rather rare occasions in death from general peritonitis, or from general sepsis.

The constitutional symptoms, if I may so term them, are endocarditis, myocarditis, myositis in various locations and so-called gonorrheal rheumatism or gonorrheal arthritis.

Many of these cases go on to resolution automatically. Of those which do not, consistent, properly performed stripping of the vesicle will clear up another large percentage, and the disease will not recur if all the other lesions in the genito-urinary tract are at the same time cured. Stripping the vesicles consistently and properly cures some cases. Injection of the vesicle, it is claimed, cures some that do not give way to stripping, and what vesiculotomy or drainage of the vesicles will do remains to be seen.

DISCUSSION

DR. OLIVER LYONS, Denver: The differential diagnosis in the early stages is difficult, and a little mismanagement at this time may breed a good deal of mischief. The varieties of symptoms are due to the anatomic proximity of the vesicles to the ureter, the bladder, the peritoneum, and its nerve supply. This disease is frequently accompanied with prostatitis or posterior urethritis. Owing to the anatomic proximity of the vesicles to the bladder we frequently find in routine cystoscopic examinations the mucous membrane of the bladder covering the vesicles hyperemic and edematous. There is a mild trigonitis. This in all likelihood will give rise to frequent, painful, urgent urination, and in the acute cases perhaps to complete retention of urine. In many of the chronic or subacute cases it is not uncommon for the patients to carry from 2 to 4 ounces of residual urine. These cases are also accompanied with the usual typical mucopurulent discharge, and sometimes the patients will have a perfectly clear, sparkling urine, the only abnormality being perhaps a reaction for albumin.

DR. J. F. MCCONNELL, Colorado Springs: Fuller's method of stripping the seminal vesicles is extremely hazardous in tuberculous seminal vesiculitis because of the danger of setting up new infection and spreading the infection already established. To the rectal feel after the stripping, there is an increased tenderness as well as enlargement. Tuberculin is extremely valuable in the treatment of tuberculous seminal vesiculitis.

Cesarean Section

DR. LOUIS H. MCKINNIE, Colorado Springs: In twenty-eight cases I have performed three operations in generally contracted pelves, the internal conjugate of which measured 6, 8 and 9 cm., respectively; two in flat pelves, measuring 9 and 8 cm. Four patients, some of whom were permitted to go into trial labor not through choice, but through lack of measurement and observation, had measurements of 10, 11, 12 and 9 cm. There were two deformed pelves; in two there were no measurements on which reliance could be placed, the internal conjugate being made out as best we could at 4 and 5 cm. In these eleven cases there have been one maternal and two children's deaths. Two of the operations were performed on the same mother. One objection against cesarean section is: once a cesarean section, always a cesarean section. This woman on whom I advised the first operation absolutely declined the second and said she would deliver herself or die. Four cases were placenta previa.

I have operated in ten cases of eclampsia with no deaths. These patients were all in more or less coma when the operation was done; all of them had had one or more convulsions. I prefer gas-oxygen for this operation. To me it carries less danger in the eclamptic than ether or chloroform, because it has less effect on the kidneys. The patient is quickly under the anesthesia and the uterus contracts much more promptly. DeLee does not like gas-oxygen, stating that it will not relax the abdominal wall, and unless the child is delivered rapidly it will be asphyxiated. Of 28 cases, there were 29 children; maternal deaths, one from infection; children four, one death caused by head being crushed by forceps, but living at the time of delivery; one died suddenly six hours after delivery; twins, premature, twins not diagnosed, since the mother was absolutely unconscious when found, fetal heart sounds present, the size leading us to believe that it was about at term.

DISCUSSION

DR. H. R. BULL, Grand Junction: About three years ago I was called seventy-five miles to see a woman who was

reported to be having severe hemorrhages at term. I found her in a log cabin with a centrally implanted placenta, showing there was considerable loss of blood. She had had three hemorrhages previous to the time I saw her. It became a question of what was the right thing to do, whether in a log cabin to do Braxton Hicks' version with a mortality of at least 50 or 60 per cent. to the child and 80 per cent. to the mother under these conditions, or to try to get her to a hospital and do a cesarean section. I chose the latter alternative. I narcotized her, put her on the train, and took her to a hospital where I did a cesarean section on her, delivered her of a living child, and she made a good recovery.

DR. THOMAS A. DAVIS, Portland: There are a certain number of women with lesions of the heart who can be delivered by cesarean section safely, but could not go through the regular routine of delivery.

DR. H. R. MCGRAW, Denver: In placenta previa I think cesarean section is an ideal operation, although in a great number of cases this operation is done where the old methods could probably be used just as well. In tuberculosis I should consider cesarean section a dangerous procedure. I do not use gas-oxygen for the reason that I find I cannot get sufficient muscular relaxation.

Surgical Tuberculosis of the Peritoneal Cavity

DR. OSCAR M. SHERE, Denver: Laparotomy per se must not be regarded as a cure in tuberculous peritonitis and its empiric performance has no place in scientific surgical therapy. Removal of the localized focus, in the abdomen is the only rational form of treatment in this disease. In the chronic forms surgery should be limited to those instances in which there is great tension from effusion or intestinal obstruction due to adhesions. Energetic hygienic measures as well as a properly administered tuberculin treatment will greatly improve the results attained in these cases.

The Present Status of Roentgen Therapy

DR. SAMUEL B. CHILDS, Denver: In the treatment of superficial epitheliomas the Roentgen ray can effect a permanent cure in more than 95 per cent. of the cases, and the results obtained from a cosmetic standpoint are superior to those obtained by any other method of treatment. In leukemia and Hodgkin's disease a symptomatic cure is greatly enhanced by the use of deep Roentgen therapy. In uterine hemorrhage in carefully selected cases, a cure can be expected in over 95 per cent. At present, however, deep Roentgen therapy seems indicated chiefly in the treatment of uterine hemorrhage in those cases in which an operation is undesirable. In exophthalmic goiter we have a remedy in Roentgen therapy which can relieve comparatively early the alarming symptoms in many cases, and if an operation is later deemed necessary the patient will be in a better condition to successfully stand it. All operable deep-seated cancers, with adjacent lymphatic glands, should be thoroughly removed surgically and an area wide of the entire locality should be treated by the most approved methods of radiotherapy as soon after the operation as possible and as thoroughly as though the disease still existed. From the results already reported in the treatment of deep-seated cancers, postoperative radiotherapy can be depended on to diminish materially the present high percentage of recurrences. All patients with inoperable cancer should have the benefit of radiotherapy, supplemented by electro-coagulation in cases suitable therefor.

Spontaneous Pneumothorax in the Tuberculous

DR. CHARLES O. GEISE, Colorado Springs: In two cases a spontaneous pneumothorax developed while the patient was under treatment by artificial pneumothorax. My experience with spontaneous pneumothorax in the tuberculous has been decidedly unfavorable as to prognosis, no patient under my observation having entirely recovered. I have attempted the withdrawal of the fluid and the introduction of equal amounts of air or nitrogen with only partial success. I have attempted extensive rib resection in three cases with death in two and marked improvement in one; these fluids have become purulent at periods varying from a few days to several months.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Physiology, Baltimore

September, XLI, No. 3

1 Unilateral Destruction of Semicircular Canals in Cats. H. G. Fisher and H. R. Muller, Baltimore.—p. 267.
2 Photographic Method for Measuring Surface Area of Human Body. F. G. Benedict, Boston.—p. 275.
3 Relationship Between Body Surface and Heat Production Especially During Prolonged Fasting. F. G. Benedict, Boston.—p. 292.
4 *Interauricular Time Interval. G. Bachmann, Atlanta, Ga.—p. 309.
5 *Differences in Irritability and Latent Period in Different Parts of Wall of Stomach. W. C. Alvarez, San Francisco.—p. 321.
6 *Vegetarian Diet in Light of Present Knowledge of Nutrition. E. V. McCollum, N. Simmonds and W. Pitz, Madison, Wis.—p. 333.
7 Distribution in Plants of Fat Soluble A, Dietary Essential of Butter Fat. E. V. McCollum, N. Simmonds and W. Pitz, Madison, Wis.—p. 361.
8 Effect of Certain Procedures on Course of Fatigue in Frog's Muscle. J. O. Crider and W. W. Robinson, Oxford, Miss.—p. 376.
9 Blood Pressure in Experimental Pneumonia. L. H. Newburgh and W. T. Porter, Boston.—p. 384.
10 Physiology of Reproduction in Birds. Occurrence and Measurements of Sudden Change in Rate of Growth of Avian Ova. O. Riddle, Long Island, N. Y.—p. 387.
11 Id. Chemical Composition of White and Yellow Egg Yolk of Fowl and Pigeon. A. A. Spohn and O. Riddle, Long Island, N. Y.—p. 397.
12 Id. Metabolism of Egg Yolk of Fowl During Incubation. O. Riddle, Long Island, N. Y.—p. 409.
13 Id. When Gland Functions for First Time Is Its Secretion Equivalent of Subsequent Secretions? O. Riddle and A. A. Spohn, Long Island, N. Y.—p. 419.
14 Id. Effect of Alcohol on Size of Yolk of Pigeon's Egg. O. Riddle and G. C. Basset, Long Island, N. Y.—p. 425.
15 Id. Sexual Differences in Fat and Phosphorus Content of Blood of Fowls. J. V. Lawrence and O. Riddle, Long Island, N. Y.—p. 430.

4. Interauricular Time Interval.—Bachmann maintains that the time of onset of right and left auricular contraction, contrary to general belief, is not synchronous. The excitatory wave originating in the sino-auricular node reaches the right auricle sooner than the left; hence the right auricle contracts an appreciable time before the left. The time difference averages 0.013 second. The most important path of conduction between the two auricles appears to be the interauricular band. This special importance is demonstrated by the effects of crushing the band, the conduction being delayed 3 to 4.6 times the normal average. The interauricular band has not the same importance relatively to the auricles that is possessed by the auriculoventricular band, as crushing does not cause a complete block. Its importance lies in the circumstance that its fibers form the most direct interauricular path and that the rate of conduction is highest along this path.

5. Irritability in Different Parts of Stomach.—The stomachs of frogs, rabbits, cats and dogs were examined by Alvarez. He found that the latent period for faradic, galvanic and mechanical stimuli is shortest around the cardia and along the lesser curvature so far as the incisura angularis. These limits include also the most irritable part of the stomach. The region of the greater curvature and fundus is much less irritable and often fails to react at all. The pyloric ring is more irritable and reacts more promptly than does the rest of the antrum. The duodenum is much more irritable than the pyloric antrum. The posterior surface of the stomach is a little less irritable than the anterior surface, and the latent periods are longer. With the exception of the cardia and lesser curvature, the stomach in situ is often quite refractory to stimulation in its cardiac half. This seems to be due to nervous inhibition as it is less marked in the excised stomach, and still less so in strips of muscle cut from the fundus or greater curvature. It seems likely that the nervous mechanism serves more to restrain the muscle—to keep it from reacting to every stimulus—than to render it more irritable. The little work done so far on the stomach of man has given results in agreement with those obtained in animals.

6. **Adequacy of Vegetarian Diet.**—Since, apparently, nothing is known regarding the chemical natures of certain dietary essentials, and since the unknown factor which is present in certain fats seems to contain neither nitrogen nor phosphorus, the authors have proposed to discontinue the term vitamin and have suggested the terms fat soluble A and water soluble B. The fat soluble A which is essential for growth and certainly in mammals for maintenance as well, was first observed in butter fat, but was later found to be present in many natural foodstuffs. Butter fat and egg yolk fat apparently contain more of it than any other natural foods. Animal tissues contain some of this unknown factor, especially the active organs. It is present in small, but wholly inadequate amounts in the cereal grains. A much greater content of it is found in the leaves of the forage plants, among which the authors have studied the flour prepared by grinding alfalfa leaves. The vegetable oils generally contain very little if any, of this substance. Water soluble B, appears never to be associated with the fat fraction as it is isolated from natural foods. In their experimental diets the authors have employed either water extracts or alcoholic extracts of wheat embryo as a source of the water soluble B. For the fat soluble A, 3 to 5 per cent. of butter fat suffices. Diets consisting of purified protein, dextrin and salts, which will not induce growth in young rats, likewise produce no growth when one of the additions, wheat embryo extract or butter fat is added, but becomes adequate when both are present.

The practically complete success in the nutrition of rats with strictly vegetarian diets made up of but three natural foodstuffs, and the failure attending the employment of a wider variety in the food mixture, emphasizes the fallacy of the assumption that the safest plan to insure perfect nutrition, is to include a wide variety in the selection of the constituents of the diet. So long as definite knowledge is wanting concerning the specific nutritive properties of the constituents of the diet, variety will unquestionably make for safety, but will not by any means assure safety. The conscientious adherence to a vegetarian diet by one who has no adequate technical knowledge regarding the subject of diet appears to be fraught with danger since among the foods of vegetable origin, ordinarily consumed by human beings, several dietary factors are, as a rule, of an unsatisfacory chemical character. It is certain that all of the components of a successful diet are present in foods of plant origin.

Annals of Surgery, Philadelphia

September, LXIV, No. 3

16 *Tumors of Carotid Body; Report of Two Cases. R. Winslow, Baltimore.—p. 257.
17 Transverse Incisions in Upper Abdomen. A. V. Moschcowitz, New York.—p. 268.
18 Technic and Management of Operations on Stomach. G. W. Crile, Cleveland.—p. 290.
19 *More Radical Treatment of Duodenal and Gastric Ulcer. J. B. Deaver, Philadelphia.—p. 294.
20 *Radium Treatment of Uterine Cancers. J. Ransohoff and J. L. Ransohoff, Cincinnati.—p. 298.
21 *Radical Operation for Cancer of Rectum and Rectosigmoid. W. J. Mayo, Rochester, Minn.—p. 304.
22 Sarcoma of Appendix. M. G. Wohl, Omaha.—p. 311.
23 Fractures About Wrist in Childhood and Adolescence. A. C. Burnham, New York.—p. 318.
24 *Undescended Testis. D. N. Eisendrath, Chicago.—p. 324.
25 Acute Suppurative Pancreatitis; Gangrene of Major Portion of Pancreas. Recovery. Determination of Pancreatic Function Three Years Subsequently. R. T. Miller, Pittsburgh.—p. 329.
26 Amebic Abscess of Liver. A. C. Wood, Philadelphia.—p. 335.
27 System of Keeping Surgical Records. C. H. Frazier, Philadelphia. —p. 347.
28 Surgical "Follow-Up" System. C. L. Gibson, New York.—p. 349.

16. **Tumors of Carotid Body.**—The two cases reported by Winslow do not differ materially from those that have been reported hitherto, except that the growth in one case had only been noticed for two months previous to operation, which would suggest a malignant process. If such was the case, however, a radical cure appears to have been attained, as the girl was free from recurrence five years later. The age of this girl (16) is also exceptional for the development of a carotid tumor. The second case appears to conform more closely to the usual type of cases that have been reported. The patient was a young man, aged 24 years, with a slow growing lump that had been noticed eight years before it became sufficiently large to suggest to him the propriety of a surgical procedure for its removal. A very interesting phenomenon in the first case was the sudden and prolonged tachycardia that followed the ligation of the carotid vessels. Apparently no injury was done to the pneumogastric nerve to cause a loss of its inhibitive action on the heart. There was no perceptible influence on the pulse of the second case when the carotid was ligated, and it never exceeded 80 per minute during the time he was in the hospital. In this case the pneumogastric nerve was not seen, but as he had paralysis of the left vocal cord and postoperative contraction of the left pupil, damage must have been inflicted on the nerve itself or, more likely, on the left recurrent laryngeal branch. Another point of considerable interest in this case is the fact that while the common carotid artery tunneled the tumor the external carotid was not seen.

19. **Treatment of Duodenal and Gastric Ulcer.**—Deaver reports his belief that all ulcers of the duodenum or stomach are best treated by excision. In the presence of a strong clinical probability of gastric ulcer supported by positive Roentgen ray evidence or doubtful findings to palpation and inspection he does not hesitate to perform gastrotomy in order to settle the matter by inspection of the mucosa. In the individual case the advisability of excision depends on the local condition. Deaver says that no ulcer should be excised when subsequent closure and anastomosis present too great operative hazards. It is in such cases that operations which depend on drainage and alteration of gastric chemistry have their field.

20. **Radium Treatment of Uterine Cancers.**—Of the three operable cases treated with radium by the Ransohoff's a clinical cure has been effected in each case.

21. **Cancer of Rectum and Rectosigmoid.**—Of 430 patients on whom a resection was done in the Mayo Clinic, 364 recovered from the operation. Eliminating those who were operated on less than three years ago, 33.3 per cent. lived three years or more, and 28.3 per cent. lived five years or more, after operation. Mayo says these percentages may be increased fairly to 37.5 and 35.8 per cents., respectively, by subtracting from the mortality figures the normal death rates for corresponding ages for periods of three and five years, that is, 4.2 and 7.5 per cents.

24. **Undescended Testis.**—Eisendrath urges that cases of true nondescent or ectopic descent of the testis should be operated at as early an age as the condition of the child will permit, the lower limit being about 2 years. Atrophy of the spermatogenic cells occurs in about 90 per cent. of the cases of retained testis, hence the necessity for early operation. Eisendrath claims that tumor formation, torsion and the usual complications of the congenital hernia accompanying nondescent of the testis are not as rare as thought to be and must be taken into consideration in weighing the question of an operation. Hypopituitarism is not the result of the nondescent, but an independent and not infrequent accompanying condition. The operation for nondescent, that is, retained testis, has but little influence on this lack of development of the male sexual characteristics and one should be guarded in the prognosis for such cases, as well as in the possible development of the testis after operations in young adults.

Archives of Diagnosis, New York

July, IX, No. 3

29 *Recognition of Gouty Etiology in Chronic Joint Affections. W. Weinberger, New York.—p. 191.
30 Early Diagnosis of Acute Infantile Paralysis. L. C. Ager, Brooklyn.—p. 205.
31 Echinococcus Cyst of Left Lobe of Liver Discharging into Left Hepatic Duct. R. S. Fowler, Brooklyn.—p. 209.
32 Subacute Catarrhal Cholecystitis; An Early Type of Gallbladder Disease. R. S. Fowler, Brooklyn.—p. 214.
33 Early Diagnosis and Treatment of Chronic Nephritis. J. H. Barach, Pittsburgh.—p. 218.
34 Vascular vs. Interstitial Nephritis. B. G. R. Williams, Paris, Ill. —p. 227.
35 *Relation of Migraine to So-Called Acidosis of Children. J. A. Lichty, Pittsburgh.—p. 230.

36 Clinical Diagnostics of Diseases of Heart. E. E. Cornwall, Brooklyn.—p. 233.
37 Diagnostic Methods in Glénard's Disease; Enteroptosie. A. E. Gallant, New York.—p. 267.

29. **Gouty Etiology in Joint Affections.**—Of the laboratory findings pointing to the gouty etiology in chronic joint affections, Weinberger says, the most reliance may be laid on the presence of undoubted tophi and on the observation of the characteristic uric acid curve during an attack. The attack may occur spontaneously or may be produced by the addition to the food of a definite amount of purin. Although it has not been shown that the ingestion of purin gives rise to an attack in all cases of polyarthritis due to gout, in the cases presented by the author the attack developed promptly. While the diagnosis of gout may be further supported by other concurring data like high uricemia, low endogenous uric acid output, and delayed elimination of exogenous uric acid, these factors alone are either ambiguous or not distinct enough to be of any decisive value.

35. **Migraine and Acidosis of Children.**—It is a common error, says Lichty, to interpret attacks of periodic vomiting in children and infants as being attacks of so-called acidosis when they are in reality precursors of a definitely established course of migraine. The author has seen about nine patients who had so-called cyclical vomiting, later called acidosis, and now have fully developed attacks of migraine. In 700 cases of migraine he has obtained the history every now and then of bilious attacks with obstinate vomiting in childhood with migraine coming on at puberty. He advises to search diligently for a hereditary history of migraine before interpreting a condition of acidosis in childhood or before the age of puberty.

Archives of Internal Medicine, Chicago

September, XVIII, No. 3

38 *Dissociated Jaundice. C. F. Hoover and M. A. Blankenhorn, Cleveland.—p. 289.
39 *Comparison in Various Diseases of Carbon Dioxid Tension in Alveolar Air (Plesch Method) with Amount of Carbon Dioxid in Venous Blood (Van Slyke's Method). I. C. Walker and C. Frothingham, Jr., Boston.—p. 304.
40 *Chronic Influenza in Pulmonary Tuberculosis. M. L. Hamblet and H. L. Barnes, Wallum Lake, R. I.—p. 313.
41 *Studies in Blood Pressure. With Especial Reference to Diastolic and Pulse Pressure Readings. W. W. Cadbury, Boston.—p. 317.
42 Subsequent History of Pellagrins in Spartanburg County, S. C., Who Survived Initial Attack. J. F. Siler, P. E. Garrison and W. J. MacNeal, New York.—p. 340.
43 *Treatment of Syphilis of Central Nervous System. I. C. Walker and D. A. Haller, Boston.—p. 376.
44 *Blood Fat Before and After Splenectomy. H. Dubin and R. M. Pearce, Philadelphia.—p. 426.

38. **Dissociated Jaundice.**—Hoover and Blankenhorn found true dissociated jaundice of hepatic origin in two cases of primary anemia and in two cases of lead poisoning. In the four cases bile salts were found in the blood in large amounts. Excepting in jaundice of hemolytic origin and in complete jaundice which has undergone renal dissociation, the authors have never found bile pigment without bile salts in the plasma. They claim that bilirubin and bile salts may both be present in very marked concentration in the plasma and neither pigment nor salts appear in the urine. Adsorption of bilirubin in the plasma may not only withhold the pigment from the renal filter, but also from the tissues; so there may be pronounced cholemia (pigmental) without choluria (pigmental) and also without icterus of the tissues. When pigmental cholemia is present (in varying degrees) without choluria, the collodion sack will yield no pigment to an aqueous dialysate from the plasma. When choluria attends cholemia (pigmental), the collodion sack will yield bile pigment to an aqueous dialysate from the plasma. Bile salts will dialyze from plasma when no bile salts are demonstrable in the urine.

39. **Carbon Dioxid Tension in Alveolar Air in Various Diseases.**—A total of 116 observations were made by Walker and Frothingham on 100 different cases which represented thirty types of disease. As a rule, cases were chosen in which there was not a complication of diseases. They studied primary anemia, exophthalmic goiter, typhoid, lung abscess, chronic nephritis, syphilis, chronic cardiac disease, pneumonia, acute articular rheumatism, diabetes, gastric cancer, cirrhosis of the liver, acute nephritis, asthma and miscellaneous diseases. In summing up these 116 observations it appears that in the great majority of the cases the carbon dioxid tension in the alveolar air, as collected by the Plesch method, corresponds with that as estimated in the venous blood by Van Slyke's method. Exceptions were met in exophthalmic goiter, pneumonia and asthma, but even in these diseases, except during an attack of asthma, the variations occurred in only a very small percentage of the cases. Subsequent studies on several of the cases in which marked differences occurred on the first examination showed practically identical results in the air and blood studies. From these observations it seems to the authors fair to conclude that the carbon dioxid tension in the alveolar air, as determined by the Plesch-Higgins method, agrees very closely with the results obtained by the Van Slyke method of determining the amount of carbon dioxid in the venous blood and is therefore a very accurate index of the amount of carbon dioxid in the venous blood. Furthermore, this method is applicable to a great variety of acute and chronic diseases.

40. **Chronic Influenza in Pulmonary Tuberculosis.**—Hamblet and Barnes endeavored to obtain data as to the frequency of influenza infection as a complication of phthisis; as to the frequency with which the symptoms of patients diagnosed as having pulmonary tuberculosis, but with negative sputum, may be accounted for by chronic influenza infection, and as to what extent the percentage of recoveries in sanatoriums for tuberculosis have been swelled by the inclusion of cases of influenzal bronchitis. Of 100 patients, diagnosed as having closed tuberculosis whose sputums were cultured for influenza, at least ninety-six were negative. Of 100 patients, diagnosed as having closed tuberculosis, influenza bacilli were recovered from six. Of 100 patients, with open tuberculosis, influenza bacilli were recovered from seven. Of twenty patients in whom the diagnosis of tuberculosis continued doubtful, the sputum was negative for influenza bacilli in all. In none of the patients examined did the influenza bacilli occur in pure culture nor were they the predominating organism.

41. **Studies in Blood Pressure.**—An analysis of 305 patients made by Cadbury showed that about 68 per cent. of cases of hypertension are found in patients between 40 and 69 years of age, the greatest number occurring between the ages 50 and 59. Almost three fourths of the cases, 72.8 per cent., had definite signs of chronic nephritis. Arteriosclerosis was also common. The next most common conditions were circulatory disturbances, chronic myocarditis or valvular lesions. Albumin is usually to be found at some time in cases of hypertension. If it is persistently absent, the cause of the high blood pressure is generally vascular or cardiac disease, and not renal. In hypertension cases with a normal heart load of 40 to 60 per cent., 85 per cent. had chronic nephritis. Of those cases in which the load was under 40 or over 60 per cent., only about 70 per cent. were cases of nephritis. When the load was under 40 per cent., the prognosis proved to be most unfavorable, but there were several cases without signs of cardiac decompensation. Among those whose heart load was 40 to 60 per cent., only 28 per cent. gave signs of cardiac decompensation; of those whose heart load was 61 to 99 per cent., there were 59 per cent. with cardiac decompensation, and of those whose load was 100 per cent. or more, 66 per cent. showed signs of cardiac decompensation. Hypertrophy of the heart without decompensation was most common in cases with a normal load; when the load was 100 per cent. or over, there were the fewest cases of heart hypertrophy without decompensation and the greater number of decompensated hearts. Subnormal diastolic pressures suggest the presence of aortic regurgitation and the absence of chronic nephritis.

In cardiac decompensation the effect of digitalis was rather to increase pulse pressure and systolic pressure and cause a fall in the diastolic pressure. Deaths in hypertension patients occurred most frequently between the ages of 40 and 60 years, and the underlying condition was either chronic nephritis or chronic disease of the heart, or a combination of the two. More

than half the deaths occurred with symptoms of uremia or apoplexy. Twenty-eight per cent. died with signs of progressive heart failure. The patients in more than half the fatal cases had had a systolic pressure of over 200 mm., and 86 per cent. had had diastolic pressure of over 100 mm.

43. **Treatment of Syphilis.**—Seventy-five patients with the following diagnoses have been treated at the Peter Bent Brigham Hospital; forty-eight cases of tabes dorsalis, six of general paresis of the insane, sixteen cases of cerebrospinal syphilis, and five of syphilitic meningitis. To these patients 450 intraspinal injections of salvarsanized serum and 350 doses of salvarsan were given. The results of each treatment are summarized by Walker and Haller as follows: Patients with recent syphilitic meningitis and cerebrospinal syphilis may be relieved symptomatically by intravenous salvarsan; the spinal fluid Wassermann reaction may become negative with 1 c.c. and the cell count may become normal. Patients with long-standing cerebrospinal syphilis and tabes may be benefited symptomatically following salvarsan, but little or no change occurs in the spinal fluid findings. Patients with recent and those with late syphilitic meningitis, cerebrospinal syphilis, tabes and general paresis of the insane are markedly improved following the combination of intravenous salvarsan and intraspinal salvarsanized serum (Swift-Ellis method), and those who fail to improve under salvarsan alone do improve both in symptoms and in spinal fluid findings following this double treatment. That intraspinal salvarsanized serum greatly benefits patients with central nervous system syphilis is shown by the fact that those with negative serum reactions and with positive spinal fluid findings are symptomatically relieved by this treatment. In many patients the spinal fluid Wassermann reaction becomes negative with 1 c.c., the cell count becomes normal and negative (Noguchi) globulin test is obtained following sufficient treatment with salvarsanized serum intraspinally without other medication.

44. **Blood Fat Before and After Splenectomy.**—Analysis made by Dubin and Pearce, before and after splenectomy, of the blood of dogs showed practically no change in the amount of total fats and unsaturated fatty acids, as expressed by the iodin value.

Archives of Ophthalmology, New Rochelle, N. Y.

September, XLV, No. 5

45 Studies of Optic Nerve Atrophy in Association with Chiasmal Lesions. C. B. Walker and H. Cushing, Boston.—p. 407.
46 Declinations of Vertical Meridians of Retina. G. T. Stevens, New York.—p. 438.
47 Studies on Actions of Toxins and Protein Degeneration Products on Eye. A. C. Woods, Philadelphia.—p. 451.
48 Case of Melanosarcoma of Orbit, Treated with Radium. E. B. Heckel, Pittsburgh.—p. 465.
49 Retrobulbar Neuritis with Central Scotoma from Toxic Action of Thyroidin. M. Standish, Boston.—p. 469.
50 Report of Removal of Tumor at Apex of Orbit, with Preservation of Eyeball, Case of Plexiform Neuroma of Eyelid. Microscopic Examination. A. Knapp, New York.—p. 475.
51 Improved Capsule Forceps for Intracapsular Cataract Extractions. F. H. Verhoeff, Boston.—p. 479.

Boston Medical and Surgical Journal

September 14, CLXXV, No. 11

52 *Present Status of Alveolar Osteomyelitis (Pyorrhea Alveolaris). Its Causes and Treatment with Vaccines. L. S. Medalia, Boston.—p. 367.
53 Use of Emetin. A. C. Reed, San Francisco.—p. 375.
54 Peripheral Neuritis Following Emetin Treatment of Amebic Dysentery. A. R. Kilgore, Shanghai, China.—p. 380.
55 Dystonia Musculorum Deformans — Oppenheim's New Disease of Children and Young Adults. I. H. Coriat, Boston.—p. 383.

52. **Treatment of Pyorrhea Alveolaris with Vaccines.**—"Pyorrhea alveolaris," so-called, Medalia says, is in reality a chronic alveolar osteomyelitis. The sockets are enlarged medullary spaces of the maxillary bones while the so-called "peridental membrane" is in reality a ligament which keeps the tooth suspended in the alveolar cavity. The mechanical causes are responsible for starting the disease, while the pyogenic bacteria (pneumococcus, staphylococcus, and M. catarrhalis) are responsible for keeping it up. Chronic alveolar osteomyelitis is a specific disease, though not in the sense that it is always due to one and the same organism; it is due to a variety of organisms. Systemic diseases play only a secondary part in starting the disease, but may be caused by it, and in turn become responsible for keeping up the local condition. A great many rheumatic diseases, so-called, also a great many gastro-intestinal affections are directly related to chronic alveolar osteomyelitis—"Riggs disease." The vaccine treatment of this disease, together with the proper attention to diet, cures or relieves the systemic diseases, especially the rheumatic affections. Vaccine treatment (immunotherapy), together with local mechanical treatment (and the proper attention to the general systemic condition of the patient) yields by far the best results in this intractable disease—chronic alveolar osteomyelitis.

Bulletin of Medical and Chirurgical Faculty of Maryland, Baltimore

September, IX, No. 3

56 Delivery by Abdominal Section. E. P. Davis, Philadelphia.—p. 33.
57 Oral Hygiene. B. M. Hopkinson, Baltimore.—p. 39.

California State Journal of Medicine, San Francisco

September, XIV, No. 9

58 Value of Fuchsin in Urology. V. G. Vecki, San Francisco.—p. 349.
59 Industrial Hernia. W. B. Smith, Randsburg.—p. 351.
60 Diagnosis and Treatment of Poliomyelitis in Preparalytic Stage. J. A. Colliver, Los Angeles.—p. 352.
61 Removal of Foreign Bodies from Esophagus and Respiratory Tract. H. B. Graham, San Francisco.—p. 354.
62 Periodontal Septic Foci. T. S. Smith, San Francisco.—p. 356.
63 Apocodein — New Laxative with Exceptional Advantages. W. C. Alvarez, San Francisco.—p. 363.
64 Pathologic Anatomy, Symptoms and Diagnosis of Renal Tuberculosis. L. J. Roth, Los Angeles.—p. 366.
65 History in Group Study. J. M. Read, San Francisco.—p. 369.
66 Retrodisplacements of Uterus with Especial Reference to Their Causation and New Method of Treatment. J. C. Neel, San Francisco.—p. 372.

Illinois Medical Journal, Chicago

September, XXX, No. 3

67 Improved Technic in New Submucous Operation. O. Tydings, Chicago.—p. 161.
68 Tonsil — Its Medicolegal Aspect. C. J. Whalen, Chicago.—p. 164.
69 Tonsil in Its Relation to Series of Infection Sequences. F. Buckmaster, Effingham.—p. 166.
70 Diagnostic and Prognostic Value of Visual Fields with Some Suggestions in Technic. G. F. Sucker, Chicago.—p. 173.
71 Detection of Monolateral Malingerers and Demonstration of Instrument. C. B. Wagner, Chicago.—p. 178.
72 Horse Hair Suture for Relief of Tension in Glaucoma. J. W. Smith, Bloomington.—p. 179.
73 Common Focal Centers of Metastatic Infections in Upper Respiratory Tract. W. J. Rideout, Freeport.—p. 180.
74 Treatment of Penetrating Injuries to Eyeball. H. W. Woodruff, Joliet.—p. 183.
75 Circular Plastic of Eyelid in Cicatricial Ectropin. E. F. Snydacker, Chicago.—p. 186.
76 Diagnosis of Disorders Affecting Perception Organ of Hearing. O. J. Stein, Chicago.—p. 188.
77 Value of Roentgenogram in Diagnosis of Mastoid Disease. G. E. Shambaugh, Chicago.—p. 193.
78 Treatment of Chronic Constriction of Eustachian Tubes. A. S. Rochester, Chicago.—p. 195.
79 Comparative Value of Indirect and Direct Laryngoscopy. S. A. Friedberg, Chicago.—p. 197.
80 Examination of Discharge in Mastoid Disease. A. H. Andrews, Chicago.—p. 198.
81 Danger of Incomplete Examination in Nasal Conditions. C. H. Long, Chicago.—p. 200.
82 Operative Measures Advocated in Removal of Faucial Tonsil. A. B. Middleton, Pontiac.—p. 202.
83 Prognosis and Treatment of Common Intracranial Complications of Nose, Throat and Ear Infections. N. H. Pierce, Chicago.—p. 203.

Iowa State Medical Society Journal, Des Moines

September, VI, No. 9

84 Signs of Times. L. L. Henninger, Council Bluffs.—p. 377.
85 Practical Points on Refraction. F. W. Dean, Council Bluffs.—p. 378.
86 Cause and Treatment of Accommodative Weakness. F. E. Franchere, Sioux City.—p. 380.
87 Eye-Strain. E. C. Lawrence, Des Moines.—p. 382.
88 Certain Types of Appendicitis. D. W. Ward, Oelwein.—p. 384.
89 Vaccine Therapy. M. F. Stults, Wiota.—p. 388.
90 Dyspepsia. W. C. McGrath, Eagle Grove.—p. 394.

Medical Record, New York

September 9, XC, No. 11

91 Clinical Possibilities of Pharyngeal Pituitary. W. S. Bryant, New York.—p. 441.
92 Hereditosyphilitic Dental Stigmata. J. B. Stein, New York.—p. 445.
93 *Primary Carcinoma of Lungs. E. Scott and J. Forman, Columbus. —p. 452.
94 Gastro-Enterology and Surgery. J. C. Johnson, Atlanta, Ga. —p. 455.
95 Alkaloidal Adjuvants in General Anesthesia. R. C. Coburn, New York.—p. 460.

93. **Primary Carcinoma of Lungs.**—This paper is a study of four specimens of primary carcinoma of the lung. Based on a slight increase in temperature, the presence of a cough, evidence of consolidation in the lung and the loss of flesh, each case was mistaken for one of pulmonary tuberculosis in an advanced stage. Complete necropsies were held in each instance, and no new growths were found other than in the lung. The new growths in three instances begins in the large bronchus at the root of the lung, and extends along it into the substance of the lung. In all three cases, the bronchial lymph nodes have been invaded and overgrown by the neoplasm. The growth has extended into the pericardium in two cases. In one case there was also a distinct invasion of the esophagus producing stricture. In each lung there is a thickening of the pleura, which is especially marked over the portion of the lung involved by the tumor.

Military Surgeon, Washington, D. C.

September, XXXIX, No. 3

96 Relation of Civilian Physician to National Preparedness. L. A. La Garde, U. S. Army.—p. 237.
97 Inactive Medical Reserve Corps in War. H. C. Coe, U. S. Army. —p. 244.
98 Some General Information Concerning Diagnosis and Treatment of Syphilis. M. A. Reasoner, U. S. Army.—p. 253.
99 Proposed Methods of Venereal and Hygienic Educational Prophylaxis. W. D. Owens, U. S. Navy.—p. 265.
100 Use of Habit Forming Drugs (Cocain, Opium and Its Derivatives) by Enlisted Men. Report Based on Work Done at United States Disciplinary Barracks. E. King, U. S. Army.—p. 273.
101 Fumigation by Cyanid Gas. R. H. Creel, U. S. P. H. Service.—p. 282.
102 Duties of Medical Supply Officers and Their Methods. H. I. Raymond and E. P. Wolfe, U. S. Army.—p. 288.
103 Malingering. H. R. McKellar, U. S. Army.—p. 293.
104 Proposed Motor Ambulance Company. M. Ashford, U. S. Army. —p. 300.

New Jersey Medical Society Journal, Orange

September, XIII, No. 9

105 *Phases of Cancer Problem. J. G. Clark, Philadelphia.—p. 461.
106 *Indications for Surgery. E. J. Ill, Newark.—p. 468.
107 *Morbidity of Childhood and Mortality of Succeeding Decades. T. N. Gray, East Orange.—p. 472.
108 *Education of Nurse. G. K. Dickinson, Jersey City.—p. 481.

105, 106 and 107. Abstracted in THE JOURNAL, July 29, p. 389.

108. Abstracted in THE JOURNAL, July 29, p. 390.

New York Medical Journal

September 9, CIV, No. 11

109 Tuberculosis in Relation to Feeblemindedness. P. Bryce, Ottawa, Ont.—p. 481.
110 Some Thoughts on Prostatectomy. H. H. Morton, New York. —p. 485.
111 Case of Hypopituitarism. L. N. Boston, Philadelphia.—p. 490.
112 Quartz Light in Cutaneous Diseases. E. Pisko, New York.—p. 493.
113 Symptom Ataxia. H. F. Wolf, New York.—p. 494.
114 Dysentery in Serbia. J. Rudis-Jicinsky, Chicago.—p. 495.
115 Preexisting Condition of Injured. G. R. Doré, Bordeaux, France. —p. 498.
116 Test for Syphilis. G. B. Ubel, Ithaca.—p. 503.
117 Drug Addiction. E. W. Markens, Newark, N. J.—p. 504.
118 Recovery from Tetanus. B. Scheinkman, New York.—p. 505.

Northwest Medicine, Seattle, Wash.

September, XV, No. 9

119 Medical Education. R. B. Dillehunt, Portland, Ore.—p. 285.
120 Etiology and Pathology of Arteriosclerosis. F. Epplen, Spokane. —p. 289.
121 Symptoms and Diagnosis of Arteriosclerosis. C. R. McCreery, Tacoma.—p. 294.
122 Prophylaxis and Treatment of Arteriosclerosis. E. W. Janes, Tacoma.—p. 296.
123 Eye Symptoms in Arteriosclerosis. H. Stillson, Seattle.—p. 300.
124 Deep Roentgenotherapy with Coolidge Tube. J. H. Snively, Seattle.—p. 302.
125 Splenomedullary Leukemia. Treatment by Roentgen Ray and Benzol; Report of Case. E. Myers, Portland, Ore.—p. 306.
126 Varieties of Acidosis. J. Besson, Portland, Ore.—p. 309.

Oklahoma State Medical Association Journal, Muskogee

September, IX, No. 9

127 Anatomy, Physiology and Pathology of Accessory Sinuses of Nose. A. C. McFarling, Shawnee, Okla.—p. 271.
128 Sinusitis. J. H. Barnes, Enid.—p. 279.
129 Treatment — Conservative and Radical. G. E. Hartshorne, Shawnee.—p. 282.
130 Active Immunization by Vaccine Therapy. W. H. Bailey, Oklahoma City.—p. 287.
131 Early Diagnosis of Incipient Pulmonary Tuberculosis in Adult. W. F. Dutton, Tulsa.—p. 291.
132 Some Proctologic Don'ts. J. M. Cooper, Oklahoma City.—p. 294.
133 Oklahoma's School of Medicine. L. R. Long, Oklahoma City. —p. 295.

Southern Medical Journal, Birmingham, Ala.

September, IX, No. 9

134 Syphilis of Nervous System. B. R. Tucker and H. J. Hayes, Richmond, Va.—p. 765.
135 Clinical Study of Epilepsy. D. D. V. Stuart, Jr., Baltimore.—p. 767.
136 Ocular Complications of Malaria and Toxic Effect of Quinin on Eye. W. T. Davis, Washington, D. C.—p. 769.
137 Modern Medicine. W. E. Deeks, New York.—p. 773.
138 *Etiology of Pellagra in Children. H. W. Rice, Columbia, S. C. —p. 778.
139 Pellagra in Charleston, S. C. W. A. Smith, R. M. Pollitzer and H. S. Mustard, Charleston, S. C.—p. 786.
140 Diagnosis of Cutaneous Cancer. H. H. Hazen, Washington, D. C. —p. 790.
141 Operation of Vital Statistics Law in Arkansas. C. W. Garrison, Little Rock, Ark.—p. 797.
142 Registration of Births and Deaths in Dallas, Texas. E. B. Summers, Dallas, Texas.—p. 800.
143 Vital Statistics Vitalized. W. L. Heizer, Bowling Green, Ky. —p. 803.
144 Need of Uniform Health Regulations in Southern States. D. W. Jones, Brookhaven, Miss.—p. 806.
145 *Mesenteric Thrombosis and Embolism; Report of Thirty-Five Cases. J. H. Blackburn, Bowling Green, Ky.—p. 810.
146 Injuries of Urinary Tract. H. J. Williams, Macon, Ga.—p. 820.
147 Proper Management of Placenta Praevia. M. S. Davie, Dothan. —p. 826.
148 Application of Protracted Proctoclysis in Treatment of Eclampsia. G. M. Murray, Atlanta, Ga.—p. 829.
149 Etiology and Pathology of Trachoma. Differentiation from Allied Conjunctival Conditions. J. M. Ray, Louisville, Ky.—p. 832.
150 Treatment of Trachoma. H. T. Aynesworth, Waco, Texas.—p. 836.
151 Diphtheria Involving Sinuses, Mastoid and Middle Ear. F. Vinsonhaler, Little Rock, Ark.—p. 839.

138. **Pellagra in Children.**—A study of 200 pellagrous orphan children was made by Rice. The facts in a large per cent. of the cases of pellagra in one orphanage strongly discredit an essentially causative relation of corn. The incidence of pellagra was much higher in children under 12 years of age. The differences discovered in the diet of the smaller and larger children seem inadequate to account for this age distribution. But there appears to be some relation between the amount of animal food consumed and the spread of pellagra in orphanages. The predisposing factors: age, sex, hereditary weakness, poor nutrition and coincident diseases, apparently were operative in this series of cases. There was no evidence pointing to unsanitary conditions or to the insects as a cause of the spread of the disease.

145. **Mesenteric Thrombosis and Embolism.**—In twenty-five of thirty-four cases of this affection analyzed by Blackburn in which a clinical diagnosis was made, intestinal obstruction was found in ten cases, mesenteric thrombosis in three cases, and suspected mesenteric thrombosis in one. Strangulated hernia and "acute surgical abdomen" were pronounced in two cases each. The following diagnoses were made in one case each: Appendicitis, appendicitis and peritonitis, peritonitis, acute hemorrhagic pancreatitis, fecal impaction, intestinal perforation in typhoid, and ptomaine poisoning. Pain was present in twenty-six of the thirty-three cases. It is described as cramp-like, severe, extreme, intense, and agonizing. It was localized in the epigastrium in two cases, lower abdomen in one, about umbilicus in four, to left of umbilicus, left half of abdomen in three cases, to right of umbilicus and above in two cases, median in one case, and general in ten cases. In three

instances the pain was defined as localized at first, becoming general later. In one instance as general at first, localizing in lower abdomen later. In twenty cases tenderness was located as follows: Six general, six right side, two left side, two median, two lower abdomen, one epigastric, and one at umbilicus and lower abdomen.

Vomiting is mentioned alone in seven cases; nausea and vomiting in twelve. The bowels were constipated in ten cases. Distention is mentioned in twenty-seven cases; muscular rigidity is mentioned in four cases. The temperature in most cases was normal or subnormal early in the attack, but may rise to 104 or 105 degrees, if progress of case is not too rapid. Late in the attack, with the collapse, the temperature frequently becomes subnormal again. The pulse rate is almost always above 110 to 120, frequently 140 to 150. In the three cases in which the leukocyte count was recorded it was as follows: Increased from 5,000 to 31,000 after admission (four days), 28,000 and 21,000. The order of frequency of the different symptoms was as follows: distention, pain, tenderness, pulse and temperature ratio, nausea and vomiting, constipation, tumor and melena. It is worthy of note that melena, which is considered characteristic of this condition, was present in only three cases. Most of these symptoms varied as to time of onset, localization, radiation, duration, etc. Apparently the ideal method of treatment consists in resection of the intestine, with an end-to-end or lateral anastomosis, and closure of the abdomen; but the recoveries occurred after this method on account of the small amount of intestine involved rather than from the particular technic used. In the cases with more extensive destruction of intestine, the drainage must be used after the anastomosis, or without it in extreme cases.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

August 26, II, No. 2904

1 Prehistoric War Wound. L. F. West and A. Keith.—p. 281.
2 *Salt Pack Treatment of Infected Gunshot Wounds. J. E. H. Roberts and R. S. S. Statham.—p. 282.
3 Plea for Ignoring "Laudable Pus" in Treatment of Septic Wounds. M. Donaldson, E. Aiment and A. J. Wright.—p. 286.
4 Secondary Infections of Joints in Acute Medical Ailments; Report of Cases. G. H. Edington.—p. 289.
5 Death After Nitrous Oxid-Oxygen and Spinal Anesthesia. W. E. Robinson.—p. 291.

2. **Salt Pack Treatment of Infected Wounds.**—The method of dressing wounds with a firm pack of gauze and sodium chlorid tablets combined with a preliminary free excision of the wound and lacerated and infected tissues, has given results which have effected revolutionary changes in methods of treatment. During the last twelve months it has gradually supplanted other methods of treatment, until now the authors and others employ it in the majority of cases. The operative details in connection with a wound naturally vary with the site, nature and degree of infection of the wound. For example, wounds of the buttock by shrapnel ball or shell are invariably laid open in their whole extent. If there are separate entry and exit wounds they are joined by an incision dividing the glutei down to the track between them. Foreign bodies are removed and the necrotic tissue lining the track excised. Bleeding points are tied with catgut, and after examination for bony or visceral lesions a salt pack is applied. Such a wound is often ready for suturing within ten days to a fortnight.

The superficial wound if small is excised so that it will admit a finger. The full extent of the wound is then determined so far as possible by digital examination, and unless essential structures are involved the whole area is laid open, all pockets being exposed to the end. Foreign bodies, including pieces of cloth and blood clot, are carefully searched for and removed, and all necrotic tissue cut away with scissors until a freely bleeding surface remains. If the deep fascia or superficial muscles tend to come together and close the mouth of the wound sufficient tissue is excised to ensure that, when the salt pack is in place, the mouth of the wound will be widely open. A conical wound not requiring the use of drainage tubes is thus produced. In all cases side tracks and pockets are opened up so that they may be packed to the bottom. In cases in which a fracture exists, fragments, unless small and completely detached, are not removed. With the exception of iodin for the skin they do not apply any antiseptic to the wound.

Lancet, London

September 2, II, No. 4853

6 *Latent Tuberculosis. C. Y. Wang.—p. 417.
7 Diagnosis of Enteric Fevers in Inoculated Individuals by Agglutinin Reaction. G. Dreyer and E. W. A. Walker.—p. 419.
8 Method of Drop Measuring Liquids and Suspensions. R. Donald. —p. 423.
9 Employment of Blood Transfusion in War Surgery. E. Archibald. —p. 429.
10 Three Cases Illustrating Functional Consequences of Head Injuries. T. E. Harwood.—p. 431.
11 Heart and Active Service. H. J. Seeuwen.—p. 432.
12 *Use of Picric Acid in War Surgery. T. F. Brown.—p. 433.
13 Empyema Due to Infection by Bacillus Typhosus Para. A. C. C. Weeks.—p. 433.
14 Surgical Treatment of Erythema Induratum of Bazin. E. Kondeleon.—p. 434.
15 Case of Hereditary Syndactyly. W. E. Le Gros Clark.—p. 434.
16 Shiah Pilgrimage and Sanitary Defences of Mesopotamia and Turco-Persian Frontier. (To be continued.) F. G. Clemow.—p. 441.

6. **Latent Tuberculosis.**—From the large amount of evidence accumulated, Wang says, one may draw the conclusion that the existence of latent tuberculosis in the human body has been abundantly proved. Further, by means of the animal test, it can be substantiated in a certain proportion of individuals otherwise not recognizable as tuberculous by the naked eye or the microscope, probably an average of about 12 per cent., with perhaps variations at different periods of life. How long tubercle bacilli may remain latent in the human body cannot be determined on the present knowledge of the subject; but in the case of animals tubercle bacilli may reside in the tissues as long as 104 days without producing any specific changes.

12. **Use of Picric Acid in War Surgery.**—The value of picric acid was tested by Brown and his associates in the treatment of over 3,000 wounded patients. They carried out the following routine treatment so far as practicable. 1. To superficial wounds 1 per cent. picric acid solution was applied on thin gauze. The wound was thus left practically exposed to the air; usually one dressing per day was sufficient. 2. Suppurating sinuses were treated by syringing with 0.5 to 1 per cent. of the solution twice daily, and hydrogen dioxid solution used every two or three days to remove débris. 3. Arm and leg baths with 0.5 per cent. solution for thirty minutes were used for suppurating fractures and crushed tissues, with an occasional bath of hypertonic saline as a change. The results were uniformly good, healthy and vigorous granulation and quick recovery taking place. Several cases of septic compound fracture and injuries to bone cleared up in a remarkably short time. Deep septic wounds caused by shrapnel, etc., granulated and were ready for skin grafting likewise. It must be noted, however, that they found 1 per cent. solution too strong for the delicate epithelium of new skin, and weaker solutions, 0.5 per cent., and 0.2 per cent., were used when the granulation reached the level of the surrounding epidermis. A 0.2 per cent. solution in water and spiritus vini rectificatus was used in several cases of erysipelas with excellent results.

Annales de Médecine, Paris

July-August, III, No. 4, pp. 323-459

17 Technic for Measurement of Blood Pressure. (Recherches sur les appareils destinés à mesurer la tension artérielle chez l'homme.) A. B. Marfan and H. Dorlencourt.—p. 323.
18 *Changes in Viscosity of the Blood. (Recherches sur la viscosité du sang humain.) O. Josué and M. Parturier.—p. 343.
19 *Varying Resisting Power of Leukocytes as Element in Prognosis. (Recherches sur les variations de la résistance leucocytaire.) P. Mauriac.—p. 370.
20 *The Urologic Syndrome in Meningococcus Meningitis. P. Cazamian. —p. 383.

21 **Tendon and Skin Reflexes in Case of Severed Spinal Cord.** (Les réflexes tendineux et cutanés, les mouvements de défense et d'automatisme, dans la section totale de la moelle d'après une observation anatomo-clinique.) H. Claude and J. Lhermitte.—p. 407.

22 **Astasia Abasia with Vestibular Nerve Disturbances in Two Syphilitics.** (Deux cas d'astasie-abasie avec troubles du nerf vestibulaires chez des syphilitiques anciens.) G. Guillain and J.-A. Barré.—p. 431.

18. **Viscosity of the Blood.**—Josué and Parturier emphasize that the viscosity of the blood can be estimated only when coagulation has been rendered impossible. Otherwise the viscosity increases as soon as the blood leaves the vessels, long before coagulation becomes manifest. All research on the viscosity of the blood that has been done with coagulable blood is fraught with error. Works on the viscosity of blood that has not been rendered noncoagulable are thus based on erroneous data. The best way to ward off coagulation is with sodium citrate. There is an unmistakable parallelism between the viscosity and the number of red corpuscles. All calculations of the viscosity should take into account separately the viscosity of the whole blood, of the plasma, and of the corpuscles. By determining the viscosity of the whole blood and the plasma, that of the corpuscles can be deduced from them. The viscosity of the plasma is most important for the metabolism; there is ample reason to assume that the viscosity of the fluid in which the corpuscles float is not without influence on the respiratory interchanges between the red corpuscles and the depths of the tissues to which they are bringing the oxygen. But at the same time the blood is being pushed along by the heart into the vessels, and the viscosity of the whole blood is an important factor in the amount of resistance which the heart has to overcome and the amount of work it has to do. The viscosity of the plasma is thus of greatest importance for the interchanges in the organism; the total viscosity, for the mechanics of the circulation.

19. **The Resisting Power of the Leukocytes as an Element in the Prognosis.**—Mauriac expatiates on the information to be derived from the leukocyte and the advantage of studying it to determine its resisting power, its activity and its physiologic value. The means we have for this are not so numerous that we can neglect any, and the technic he has worked out for estimating the resistance of the leukocytes is simple and instructive. Three drops of blood are dropped into a tube containing 0.5 c.c. of a solution of 2.06 gm. sodium citrate and 3.6 gm. sodium chlorid in 1,000 gm. distilled water. After shaking the tube it is set aside for an hour. Then it is shaken up anew and the suspension of the corpuscles is aspirated with a pipet. On a dry slide a rectangle is traced with the pipet, from 3 to 4 cm. long by 2 cm. wide and this is covered entirely with the blood solution. Aspirating the excess of fluid leaves a moist homogeneous surface, which dries at room temperature in half an hour. The leukocytes are then stained with a saturated solution of methylene blue in physiologic salt solution. The stain is left in contact for twenty minutes, then rinsed off lightly with running water, and the slide is left to dry. Under the microscope the leukocytes show blue; the reds are not visible.

By this technic the leukocytes are not injured and show up finely. Some are seen practically normal, with distinct outline and nuclei. These are the ones that have resisted the action of the citrate solution. The ratio between these resistant leukocytes and those that have become more or less disintegrated, is the index of leukocyte resistance. In the normal subject, fasting, this index—Resistance divided by Fragility—ranges from 0.7 to 0.9. The resistance of the red corpuscles can be estimated at the same time. After an hour's contact with the citrate solution the tint of the supernatant fluid ranges from that of water to a pink or bright red, proportional to the number of reds that have been laked. He gives the curves of the leukocyte index in a number of cases of pneumonia, meningitis, nephritis and erysipelas. They show that the effectual defensive reaction on the part of the leukocytes occurs when the young and active white corpuscles show first an increased resistance and then an abrupt drop to extra fragility. He calls this the *oscillation de défense*. Unless the fragility phase is preceded by the phase of extra resistance, the outlook is bad. A fixation abscess and exposure of the spleen to radiotherapy induce polynucleosis, and hence augmented resisting powers, at first and later the disintegrating phase.

The power of regeneration of the leukocytes is the primary condition for success of medication, and all therapeutic measures which act by leukocytolysis are ineffectual so long as they disintegrate only the old corpuscles or those without physiologic importance. Worse than ineffectual, for they may do direct harm. It is necessary to proportion the leukocytolytic effect to be produced to the functional efficiency of the leukocyte-producing centers. The functional capacity of these centers should be studied and means to augment the polynucleosis applied. Only when this has been realized and the resisting powers of the leukocytes increased should we venture to apply measures that act by leukocytolysis, such as fixation abscess, Roentgen exposures of the spleen and injection of colloidal metals. The *oscillation de défense* was observed regularly in every case with a favorable outcome. It was not directly dependent on the temperature, the dyspnea, or other objective symptom, and it also seemed to be independent of the fluctuations in the resisting power of the reds. On the other hand, in meningitis the increased resistance of the leukocytes always coincided with the purulence of the cerebrospinal fluid, and there was a sudden and marked change to great fragility when the fluid cleared up.

20. **Polyuria in Meningitis.**—Cazamian discusses the urologic syndrome in the course of meningococcus meningitis, calling attention to the polyuria. It failed to appear, in his experience, only in the twenty-two fatal cases among his 101 meningitis patients. It seems to be secondary to the thirst and polydipsia caused by irritation of the nervous centers as the intensity of the inflammation subsides. The polydipsia polyuria may thus be regarded as a sign that the patient has started on the road to recovery.

Archives des Maladies du Cœur, etc., Paris

August, IX, No. 8, pp. 333-376

23 **Soldier's Heart.** D. Pletnew (Moscow).—p. 333.

Paris Médical

August 26, VI, No. 35, pp. 165-180

24 *Squill Extract as Rat Poison. (La lutte contre les rats des tranchées.) P. Lereboullet.—p. 165.

25 *Thread Drainage Wards Off Fistulas after Operations on the Anus. (La guérison rapide des fistules et des abcès de l'anus sans incontinence des matières.) H. Chaput.—p. 166.

26 **Pulmonary Tuberculosis in Cheesy Stage Cured by Artificial Pneumothorax.** R. Burnand.—p. 168.

27 **Hydrotherapy for Results of War Wounds.** (Hydrothérapie et blessures de guerre.) H. Dausset and M. Leulier.—p. 170.

28 **Hammer Hand with Ulnar Paralysis.** (Le signe de la main en marteau et de la main plantaire dans la paralysie cubitale.) Hesnard.—p. 176.

24. **Rats in the Trenches.**—Lereboullet says that nearly 50,000 rodents have been destroyed in the French trenches in the last four months. The main reliance is on rat dogs and on squillitin, the toxic extract of fresh squill bulbs.

25. **Anal Fistula.**—Chaput curets to the remotest recesses and passes a thread through the fistula, a silkworm gut or No. 10 rubber, and ties it to form a loop. He gives the details of the technic for this filiform drainage, as he calls it, for all varieties of fistulas and abscesses in the region of the anus. In ten cases of abscess the cure was soon complete, and in twenty cases of anal fistula the majority were cured in from fifteen to twenty days, without recurrence later and without cutting the sphincter.

Presse Médicale, Paris

August 24, XXIV, No. 47, pp. 369-380

29 *Semeiologic Importance of Signs of Pleurisy at the Apex. (Les signes de la pleurite du sommet et leur valeur dans le diagnostic de la tuberculose pulmonaire de l'adulte. L'adénite et la lymphangite nodulaire susclaviculaires.) E. Sergent.—p. 369.

30 **Fracture of Neck of the Femur.** H. Chaput.—p. 371.

31 **Constriction of the Jaws After War Wounds.** L. Imbert and P. Réal.—p. 372.

32 *Immobilization and Adjustable Traction for Fractured Femur. (Appareil tracteur auto-extenseur.) A. Manson.—p. 373.

33 Fracture of Lower Jaw. A. Herpin.—p. 374.
34 *Technic for Artificial Eyes After Wounds of the Orbit. (Prothèse orbitaire.) G. Valois and J. Rouveix.—p. 375.

29. Signs of Pleuritis at the Apex.—Sergent ascribes great importance to inflammatory processes in the pleura in the apex region, not only for the diagnosis of tuberculosis but for distinguishing the form and the stage of the tuberculous process, while, on the other hand, it explains many blunders in diagnosis. This apical pleuritis is frequently accompanied by unequal pupils and enlargement of the supraclavicular glands. The pupil on the side affected is liable to be dilated or contracted, and the gland just back of the clavicle, at the external margin of the sternocleidomastoid, can be felt. When much enlarged it is soft, but otherwise hard. Sometimes it feels like a cord knotted along its course. This supraclavicular adenitis has nothing in common with cervical adenitis. It is connected with inflammation of the pleura in the apex region much more than with inflammation of the parenchyma at the apex. It is an objective, palpable sign of pleuritis at the apex. He has found in cadavers a chain of lymphatics starting in the focus in the apical pleura and terminating in the supraclavicular ganglion palpated during life. When the ganglion is large and soft, the pleuritic process is probably active. When the pleural focus has long healed over, the gland shrivels and grows hard. This apical pleurisy is nothing new, but physicians seem to have forgotten it. The changes which it induces are liable to lead to the mistaken diagnosis of infiltration of the apex when in reality there is only a benign lesion, a simple cicatrix, relics of a long past process.

32. Immobilization and Adjustable Traction for Fractured Femur.—Manson places the leg horizontally in a long narrow wooden box with a big screw in the center of the foot end. The foot is fastened to a small board, and this is hooked by a spiral spring to the screw in the footboard of the box. The screw can thus exert traction as needed while the spring equalizes it. The counter pressure is not against the groin but against a plaster plastron enclosing the root of both thighs and the buttocks. The box extends above the knee and the intervening space is bridged with plaster, like the handle of a basket, on both sides of the thigh.

34. To Rebuild the Orbit.—Valois and Rouveix use a funnel which expands at the tip of the funnel to form a cup just the size of the space under the eyelids. This cup is worked beneath the eyelids, which brings the funnel upright. Plaster is then poured through the funnel, and thus a cast of the orbit is easily obtained. From this cast they construct a hollow, soft rubber, elastic shell which fits into the orbit. The front is of hard rubber, and this reproduces the aspect of the eye. The elastic shell transmits the movements of the orbit to the artificial eye even when there is not a trace of a stump left.

Correspondenz-Blatt für Schweizer Aerzte, Basel

August 19, XLVI, No. 34, pp. 1057-1088

35 *State of Fallopian Tubes During Puerperal Fever. (Etat des trompes dans les fièvres puerpérales et leur rôle comme voie de propagation.) H. Chassot.—p. 1057.
36 *Treatment of Dislocated Fractures of Long Bones. C. Arnd.—p. 1069.
37 *Operative Treatment of Flatfoot. C. Arnd.—p. 1074.
38 *Roentgenoscopy of Joints. (Die Darstellung der Gelenke durch Röntgenstrahlen.) C. Arnd.—p. 1075.

35. The Fallopian Tubes in Puerperal Fever.—Chassot has been making a special study of the part played by the tubes in the spread of the infectious process in nine cases of puerperal fever with necropsy. He cut sections at the isthmus, at the opening into the uterus, and at the farther end. The clinical course in each case is described and compared with the microscopic findings in the tubes. Nothing was found to indicate that the tubes had much to do with the spread of the infection. In only one case was there an old catarrhal infection that might possibly have been the cause of the uterine infection. In one other case there was pyosalpinx, presumably secondary to the ulceration in the uterus. In three cases and in one tube in a fourth case the tubes were apparently entirely normal. In the five others there was a slight, only microscopic catarrhal trouble. This noninvolvement of the tubes shows that pyosalpinx cannot be referred to an old pregnancy as often as is generally assumed at present. We must remember also that the streptococci set up acute processes as a rule, while gonococci are more the agents of chronic catarrhal conditions.

36. Treatment of Dislocated Fracture of Long Bones.—In reducing a fracture of this kind, the traction from the muscles is the most serious obstacle to be combated. Arnd gives here an illustrated description of how to guide this muscular traction to be a help instead of a hindrance. He cuts a groove in the end of each stump and lays a long stout nail in the grooves, which form a slanting double plane. The stumps are then pulled apart by the operator and an assistant. The head of the nail at the same time is pulled down to form a lever. The tip swings through a circle of from 90 to 150 degrees and levers the lower stump into place. It is held in place by the nail which is then driven slanting into the spongiosa of the upper stump. The head of the nail keeps the other stump from slipping out of place, and the lengthwise pull of the muscles coaptates the stumps while the nail prevents them from slipping to one side. The procedure is illustrated.

37. Operative Treatment of Flatfoot.—Arnd has been quite successful in treating flatfoot by displacing the tendon of the tibialis anticus to shorten it and give it a firm hold so that it pulls the arch of the foot into shape. The tendon is left intact. It is merely transferred to a deep groove chiselled for the purpose on the posterior aspect of the tuberosity of the scaphoid bone. If the tuberosity does not protrude enough for the purpose, the articulation between the astragalus and the scaphoid can be opened and a groove dug for the tendon here, suturing the ligament over the tendon again. It may be necessary to loosen the tendon sheath for part of the way, but this does not injure the tendon. The groove must be deep enough to hold the tendon in its place. The results of this method of correcting have been very satisfactory during the eighteen months to date.

38. Roentgenoscopy of Joints.—Arnd says that by injecting ether into a joint the capsule is inflated and instructive roentgenograms can thus be obtained. He leaves the cannula in place so that if the pressure seems too much, part of the ether can escape. He has thus obtained fine pictures of the destructive processes in deforming arthritis, of free bodies in the joints and dislocation of the meniscus. About 10 c.c. ether are injected, cautiously on account of danger of embolism. A very slight general anesthesia may follow, but it is transient. The ether had all been absorbed by the next day and no disagreeable consequences were observed.

Gazzetta degli Ospedali e delle Cliniche, Milan

August 17, XXXVII, No. 66, pp. 1025-1040

39 Wounded Vessel Should be Ligated Close to the Lesion. (Alcuni casi di impropria legatura delle arterie nella continuita del vaso.) G. Masnata.—p. 1027.

Pediatria, Naples

July, XXIV, No. 7, pp. 385-448

40 *Immunity Reaction and Vaccination against Scarlet Fever. (Osservazioni e ricerche sulle reazioni immunitarie spontanee o provocate nella febbre scarlattinosa.) G. Di Cristina.—p. 385.
41 *Mongoloid Idiocy. (Ancora sull'idiozia mongoloide.) U. Provinciali.—p. 392; (Contributo alla etiopatogenesi dell'idiozia mongoloide.) G. Di Giorgio.—p. 403.
42 *Thyroid and Parathyroid Insufficiency in Mother and Nursling. (Sindrome da insufficienza tireo-paratiroidea familiare.) F. Laureati.—p. 411.

40. Immunity Reaction in Scarlet Fever and Preventive Vaccination.—Di Cristina recalls that Caronia published in 1914 an account of research on scarlet fever which demonstrated that the scales from a desquamating patient seem to contain a specific antigen. An extract of these scales added to serum from a scarlet fever patient and guinea-pig complement induced the deviation of complement reaction. The test seems to be positive at all stages of the disease, and aids in the differential diagnosis. Di Cristina reports research undertaken to determine whether this extract of the scales might not be potent as a vaccine, and whether children vaccinated with it might not be rendered immune. He prepared

a vaccine with 15 c.c. convalescent serum and 10 gm. of desquamated shreds and scales, adding 0.8 per cent. phenol and 1 c.c. of the guinea-pig complement, incubating for fifteen hours at a temperature of 37 C. (98.6 F.). Then the serum was aspirated, centrifugated and distributed in vials that were then sealed in the flame. The child was injected subcutaneously with 1 c.c. of this vaccine every second day. By the second or third injection the specific deviation of complement occurred. He has treated with this vaccine ten children who had never had scarlet fever. The results are given in seven children between 2 and 5 years old, treated in this way for from three to six days. The total amount of vaccine injected was from 0.75 to 4 c.c.

The children thus treated had all been casually exposed to the disease, but it did not develop in any of them. Encouraged by this success, he left some of the vaccinated children in the scarlet fever ward for several days. Some of the children on entering the hospital had been placed by mistake in this ward. They were vaccinated after twenty-four hours' contact with scarlet fever cases, and they were allowed to sleep with patients in the eruptive and the desquamating stages, but none of the vaccinated children contracted the disease even when they were kept in the bed with scarlet fever children for several days. It is evident, he declares, that the scales contain something which confers immunity on the healthy organism. The immunity reaction thus induced can be rendered manifest by the deviation of complement test.

41. **Mongoloid Idiocy.**—Provinciali reports 2 cases from Parma and Di Giorgio 16 from Palermo, and each discusses the etiology and the prognosis. The former gave thyroid treatment or treatment for syphilis with energy and perseverance, but without appreciable effect except overcoming constipation. Di Giorgio is inclined to incriminate the ductless glands, a pluriglandular insufficiency, as the cause of mongoloid idiocy. There was a history of some chronic infection or emotional shock among the parents as a rule, in his cases. The mother of one was of a nervous temperament and the news of her husband's shipwreck reached her during this, her seventh pregnancy. The Wassermann reaction was positive in one or both parents in 4 cases; one of the mothers had a goiter, and 3 were tuberculous; one had had malaria during the pregnancy, and 3 of the fathers were hard drinkers, while a neuropathic taint was known in 4 of the families. The Abderhalden test for thyroid tissue was positive in 2 cases and improvement under prolonged thyroid treatment was evident in 2 cases.

42. **Familial Thyroid-Parathyroid Insufficiency.**—Laureati agrees with Concetti that there is a physiologic insufficiency of the thyroid in the newly born. It gradually is overcome either by the development of the child's thyroid or by its getting in the mother's milk the products of her sound thyroid. If the mother or wetnurse has thyroid insufficiency, the child may suffer from lack of thyroid secretion and fail to thrive unless given to another woman to nurse. The infant may present symptoms of thyroid deficit or thyroid excess, or there may be abortive forms or a subphysiologic thyroid state. One young woman had no symptoms suggesting thyroid trouble until she became pregnant when she gained 44 pounds in weight. Her weight dropped back to normal after the birth of the child but she was not able to nurse it long, and suffered from tremor and insomnia. The child did not thrive until a wetnurse was provided, when it began to gain at once and was soon placid and sturdy. In another pregnancy the woman had the same temporary increase in weight.

Laureati thinks there can be no doubt that thyroid insufficiency was responsible for the abnormal conditions in both mother and child. Concetti noticed that thyroidectomized goats were unable to suckle their young adequately, but produced more milk under thyroid treatment. Their milk production dwindled again when the thyroid treatment was suspended. Laureati relates that a woman developed an incomplete type of exophthalmic goiter at the close of the last three of her six pregnancies. The disturbances persisted for three months and her nursling during this period became restless and lost flesh, with digestive disturbances and debility. Under phosphorus and thyroid treatment, with bromids, for the mother and artificial feeding for the child, the trouble was soon broken up. By the tenth month the child's progress was normal in every respect. In both these cases the infants presented symptoms of the same type as the mother.

In another family, the first four of the six children of a healthy country couple grew abnormally in length and weight during the first months of life, and had laryngospasm when 4 or 5 months old and two died in convulsions. After weaning, the children became normal in weight and growth generally. As term approached in the sixth and seventh pregnancies, Laureati gave the mother a course of thyroid treatment and the children developed normally and had all the appearance of health. The right lobe of the mother's thyroid is somewhat hypertrophied, but she has never presented any symptoms suggesting exophthalmic goiter. The convulsions and tendency to tetany in this family suggest that the parathyroids in the infants were insufficient. Schiffer has reported the case of a family with five children all of whom had tetany in infancy when they were given artificial feeding but not while they were nursing their mother. Her milk evidently supplied antibodies which maintained the proper balance. When this was withdrawn, tetany manifested itself. Thyroid treatment is not only useful in warding off or curing the syndrome from thyroid and parathyroid insufficiency, but it serves also as a touchstone to reveal the true cause of abnormal development of nurslings and prove its direct dependence on the internal secretion of the thyroid gland in the nursing woman. Measures to restore thyroid functioning to normal tend to restore the balance in the ductless gland system.

Policlinico, Rome

August 20, XXIII, No. 34, pp. 1019-1042

43 Conservative Treatment of the Wounded. (A proposito della limitazione delle mutilazioni.) I. Scalone.—p. 1019; (A proposito della questione delle mutilazioni e dell'isolamento scientifico in cui si trovano le unita sanitarie avanzate.) U. Camera.—p. 1023.

Siglo Medico, Madrid

LXIII, No. 3269, pp. 497-512

44 *Classification of Blood Diseases. (Clasificacion de las hemopatias.) G. Pittaluga.—p. 498.

No. 3270, pp. 513-528

45 Jacksonian Epilepsy with Paralytic Phenomena Occurring during Two Attacks of Malaria at Three Years' Interval in Young Woman. (Caso de encefalopatia paludica.) E. F. Sanz.—p. 514.

44. **Classification of Diseases of the Blood.**—Pittaluga classifies them in ten groups as the leukemias, anemias, hyperplasias of the lymph glands and spleen, granulomatosis, new growths (lymphosarcoma, chloroma and myeloma), new growths of the blood-producing organs, parasites of these organs and of the blood, and changes occurring in both in infectious diseases and in general disease of the organs and apparatus, and what he calls hemodystrophies. This latter term comprehends the cases of disease of the blood in which the biochemical changes predominate over the histopathologic, and there is a more or less prominent neuropathic factor evident, directly or indirectly through the endocrine glands, and an inherited or familial influence, directly or indirectly. The hemodystrophies include the hemorrhagic diatheses, purpura, scurvy, hemophilia, paroxysmal hemoglobinuria and hemolytic jaundice. Polycythemia and chlorosis also belong here. The neuropathic basis of chlorosis, with the endocrine factors (internal secretion of the ovary), the abnormal metabolism of iron and formation of the hemoglobin molecule—all stamp chlorosis as a hemodystrophy.

Russkiy Vrach, Petrograd

XV, No. 25, pp. 577-600

46 *Need for More Institutional Care of Dermatologic Cases. P. V. Nikolsky.—p. 577.

47 Care of Laborers in Workshops and Factories. D. P. Nikolsky. —p. 583. Commenced in No. 24.—p. 557.

No. 26, pp. 601-624

48 *Drop Wrist Reflex or Grasping Reflex. (O "hadonnom sgibatelnom reflexie" ili "reflexie zakhvativaniya.") V. M. Bechterew.—p. 601.

49 Gunshot Wounds of the Skull. V. A. Shaak.—p. 602.
50 Treatment of Infectious Diseases with Leukocytolysis Produced by Action of Roentgen Rays on the Spleen. (Liechenie zarazmikh bolieznei leukocytolizom vizivaemim oovieshtsheniem selezenki Roentgen'ovskimi luchami.) I. I. Manukhin.—p. 616. Commenced in No. 22.—p. 522.
51 Improved Technic for Staining Horny Substance. (O novom sposobie okraski rogovogo veshtshestva.) A. M. Vasiutochkin. —p. 619.

46. **Skin Diseases in Russia.**—Nikolsky pleads for more hospital care of patients with cutaneous lesions. He cites statistics to the effect that there were in 1913 in the Russian empire 13,915,299 known cases of various skin lesions. The lists included 1,248,002 syphilitics, and 1,866 cases of leprosy; scabies, 5,475,594; parasitic lesions 194,343, and other skin lesions (eczema, erythema) 6,029,769. Of this tremendous mass of patients with skin diseases only 100,686, that is, 0.7 per cent., had been given hospital care.

48. **The Grasping Reflex.**—The flexor wrist reflex or the grasping reflex recently described by Yanishevsky (abstract 81 in THE JOURNAL, Sept. 9, p. 844), has been noted by Bechterew in focal lesions of the cerebral hemispheres, late stages of paralytic dementia, diffuse arteriosclerosis of the brain accompanied by hemiparesis, and also in a case of paralysis agitans. While this finger grasp reflex is a normal phenomenon in infants, it is inhibited in adults, and appears only when the higher inhibitory cortical centers are destroyed. The center for this reflex Bechterew is inclined to locate in the optic thalamus.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

August 19, II, No. 8, pp. 593-704

52 *Medical Education. (Een en ander over hooger onderwijs in de geneeskunde.) G. van Rijnberk.—p. 593.
53 *Cancer Mortality at Rotterdam. (Sterfte aan kanker en andere kwaadaardige gezwellen te Rotterdam over de jaren 1902-1914.) J. Sanders.—p. 604.
54 Treatment of Infectious Processes in the Orbit. (Aanwijzingen voor de behandeling der oogkasontsteking.) H. Burger.—p. 614.
55 *Prospects with Operative Treatment of Brain Tumors. (Iets over de chirurgie der hersengezwellen.) H. J. Boevé.—p. 617.
56 *Case of Epidemic Meningitis in Barracks. A. J. Korteweg.—p. 622.
57 Present Status of Knowledge in regard to Chemical and Physical Factors Predisposing to Cancer. G. F. Gaarenstroom.—p. 632.

52. **Medical Education.**—Van Rijnberk says that there is scarcely any one who does not have ideas on the best way of training men to be physicians. Professors, students and laymen all have decided views on the subject, and these ideas are at variance at nearly all points except the conviction that there is room for improvement in medical education. He continues, "But there is no hope of extensive modification of medical education. Too many factors cooperate to prevent this. Universities are conservative institutions. It is difficult to lead them into new paths, mainly from the often just fear that introduction of new, untried methods may interfere with good and tried ones. A medical school, besides, is an expensive pet. Every innovation, every improvement, clinics, laboratories, equipment, cost handfuls of money, and scarcely is one branch of learning provided for than others develop calling for additional expense. And so medical education always limps along behind onrushing science, and even at the best, it is a long way behind.

"The questions as to the number, the extent and the proportions between the various special fields of medicine are constantly pressing for solution. These special fields are ever increasing in number and each is ever broadening its scope. A consequence of this would be that the curriculum and the years of study would be constantly growing longer, if it were not for the unanticipated fact that the study of each special field makes the study of each other field much easier. There is such an intimate connection between them all that deepening one's knowledge in one brings almost regularly with it a better comprehension of all the allied fields, and thus the loss of time in one period is made up in another. Even allowing for this, however, the expansion of all the special fields embraced in the medical curriculum brings the question how to proportion them all and do justice to them without making the medical course interminably long. In the answer to this question there are two opposing views. One takes the stand that the solution must be sought in the limitation of the time devoted to the preliminary and laboratory training. The other view is that nothing should be done to disturb the fundamental studies but that the untenable fiction of the general competence of the physician should be dropped, and he should be trained in special efficiency in a narrower field."

Van Rijnberk then refers to the talks on this subject at the recent conference on Medical Education as published in THE JOURNAL, Feb. 26, 1916, p. 626, translating into his own tongue Professor Lyon's address, nearly in full, with running comment. He remarks in conclusion: "Is not all this extremely well put and absolutely true? There is no dividing line in anatomy, physiology, etc., between what is of practical use and what is not, just as there can be no sharp dividing line between anatomy and physiology and between them both and medical art and science. 'Boundaries are imaginary lines, not Chinese walls, and whatever is good physiology is good medicine.' In this I heartily concur. Nothing is more dangerous for so-called applied science than utilitarianism. The broader the biologic foundations, the better the leechcraft."

53. **Cancer at Rotterdam.**—Sanders analyzes the statistics at Rotterdam, from 1902 to 1914, bearing on the mortality from malignant tumors, and compares them with figures from other cities and lands. Up to the age of 55, women are subject to cancer more than men, but above this age the reverse is observed. The mortality for the men from cancer was 6.02 per cent. and for the women 7.34 per cent. of the total mortality during the twelve years. Calculated by 100,000 inhabitants, it was 82.2 for the men and 91.2 for the women. The corresponding figures for a five-year period or longer are for the whole of the Netherlands 107.6 (men) and 108.5 (women); England 75.1 and 100.8, and Stuttgart 63.8 and 100.9 The cancer mortality is thus highest in the Netherlands. Men develop cancer of the lip, mouth and esophagus—the organs exposed to irritation from tobacco and alcohol, while malignant disease affects in women the organs liable to feel the direct effects of a pregnancy. Any theory dealing with cancer must take these two facts into account. During the twelve years the number of deaths from cancer of the sexual organs has diminished while that of the digestive organs has increased in both sexes.

55. **Brain Tumors.**—Boevé discusscs the prospects from operative treatment, and urges that reports and statistics be kept in a way that permits accurate comparison of cases and results of treatment. He cites the reports of the leading authorities in this line. They show that the outcome is growing gradually better. Tooth's method of estimating the ultimate results seems the most instructive. He classifies his cases according to the time they survived from the beginning of symptoms to death or date of writing. The average survival thus for cases of endothelioma given operative treatment was forty-six months, and, without operation, eighteen months. A weak point of this method, however, is the determination of the first signs of trouble. In this way two parallel series of operative and nonoperative cases, revised each year to date, would prove very instructive. Boevé adds that the earning capacity should be included in the statistics. Horsley had a patient survive nine years without recurrence after removal of an endothelioma of the dura which had grown through the skull, but the man has never been able to work since, being paralyzed and blind on one side. Tooth's method of keeping the records would also show the actual benefit from palliative operations.

Boevé emphasizes further the vital importance of an early diagnosis before irreparable harm has been done, and while conditions facilitate operative intervention. It is more difficult to operate when the intracranial pressure is high. When choked disk has lasted for some time, vision is scarcely likely to be improved by removal of the tumor or a decompressive operation. The last few years have added much to our knowledge of brain tumors so that an early diagnosis is now possible with a tumor in the lateral recess, the pituitary body, the cerebellum or the motor zone. The main progress

in diagnostic measures has been in the systematic study of defects in the visual field, Barany's research, and the study of the functions of the pituitary body.

56. **Epidemic Meningitis.**—Korteweg relates that a young soldier was brought to the hospital one very hot day in a comatose state, with headache and vomiting, all ascribed to heat stroke although the temperature was only 37.2 C. (99 F.) and the pulse fluctuating, averaging 80. He was treated as for heat stroke, but by the next day the symptoms indicated meningitis. The course of the case was somewhat unusual in that the temperature and pulse declined while the brain symptoms improved. Not until the fifth day was the temperature up to 38, and it fluctuated, reaching 39 by the ninth and then dropping again to subnormal but becoming normal as convalescence advanced. The intense headache kept up until, by the eighth day, it occurred only on moving the head. The Kernig sign did not subside entirely until the nineteenth day. The whole company, 251 men, was examined for carriers and six were found, but all but one were found free from the meningococci a week and two weeks later and none were found the third week. The entire company was isolated until the carriers were sifted out, and these were still isolated in a separate building until two examinations gave negative findings. During the entire four weeks the whole regiment was spared all fatiguing exercises, and knapsacks and cartridge belts were laid aside. No further case of meningitis developed.

Finska Läkaresällskapets Handlingar, Helsingfors

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58 *Fatal Iodoform Intoxication in Tuberculous Pleurisy. A. von Bonsdorff.—p. 1057.
59 *Study of the Blood in Simple and Exophthalmic Goiter and Thyrotoxicosis. T. Sandelin.—p. 1076.
60 Etiology of Spring Conjunctivitis. O. Wallin.—p. 1083.
61 *Knotting of the Small Intestine. (Om tunntarmsknutar.) L. J. Lindström.—p. 1091.
62 Malformation Causing Spurious Congenital Diaphragmatic Hernia. V. Mäkelä.—p. 1107.

58. **Fatal Iodoform Poisoning After Intrapleural Injection.**—Von Bonsdorff has been very successful in treating tuberculous pleurisy with intrapleural injection of 1:10 iodoform glycerin in doses ranging from 5 to 15 c.c. Until recently he has never had a mishap from it although he has made 119 such injections in the last few years. Now he reports the fatal case of a merchant of 49 who had a tuberculous process in the left lung with bilateral pleurisy with effusion. He improved under artificial pneumothorax, tapping the pleural effusion and injection of the iodoform glycerin. Four injections were made in the course of eight weeks, the dose 10 c.c., the last dose 12 c.c. This was supplemented by injection of 3 c.c. and 2 c.c. in an abscess at the point of the old puncture. Three days after the last injection the man collapsed, with convulsions and maniacal attacks, speedily fatal. The man had been weakened not only by his tuberculosis but by abuse of alcohol.

59. **Blood Picture with Abnormal Thyroid.**—Sandelin has been making a special study of the blood picture since 1912 in every case of exophthalmic goiter, simple goiter and thyroid disturbance of any kind. He here records the findings in thirty-two cases. The tests were made on the fasting subject, early in the morning, after testing the technic on the healthy. The blood picture in all with abnormal thyroid functioning was practically identical, so that this cannot serve to differentiate exophthalmic from simple goiter, or as testimony for or against operative treatment. The findings also in sixteen patients from six months to two years after operative treatment of exophthalmic goiter confirmed anew the slight import of the variations from normal in the blood picture, except that when there was lymphocytosis it usually dropped to normal in time.

61. **Knotting of the Small Intestine.**—Lindström reports a case and compares it with six similar ones on record. Operative treatment was applied in five cases, with recovery of three, including his own. A long and narrow mesentery in his case favored the gradual twisting of the intestine into a knot until the sudden complete occlusion first attracted attention to it. He resected 103 cm. of the lower portion of the ileum with prompt recovery.

Hospitalstidende, Copenhagen

August 23, LIX, No. 34, pp. 825-844

63 *Research on Gastric Secretion in Thousand Patients, especially Secretion of Pepsin and Mucus. (Undersøgelser over Ventrikelsekretionen.) G. Wiltrup.—p. 825. Commenced in No. 33.—p. 801.
64 Technic for Inducing Abortion at Fifth Month. (8 Tilfælde af Abortus provocatus i Tiden omkring 5te Svangerskabsmaaned.) V. Esmann.—p. 833.

63. **The Stomach Secretion in a Thousand Patients.**—Wiltrup classifies and tabulates the findings in 1,000 patients at the medical department of the Copenhagen general hospital. They confirm the view that increased secretion of mucus with an Ewald test meal is a sign of organic abnormal conditions. It occurs early, often before the pepsin shows signs of anything wrong. With the more chronic affections, the secretion of mucus is less, and it is rare to find any mucus in the most pronounced forms of chronic gastritis with complete achylia and apepsia. The admixture of mucus fluctuates from day to day, and is most profuse with exogenous gastritis. His sixteen tables show among other things that anacidity is practically always associated with reduced or lost peptic power. Also that hypopepsia is always a sign of gastritis. This may have existed for some time before the hypopepsia manifests itself. Some of the cases prove that hypopepsia may exist as the only secretory anomaly with an organic gastric affection. Admixture of a small amount of mucus with the stomach contents after an Ewald meal is a frequent phenomenon and of no import in the smaller amounts. But when present in considerable amounts, this is always a sign of gastritis, generally the acute and the ectogenous forms of gastritis. The diagnosis of acid gastritis is evident when normal acid findings are accompanied by considerable secretion of mucus. The peptic power then is normal or reduced. In 74 cases of chronic polyarthritis there was achylia in 26; hypochylia in 9, and the peptic secretion was normal in 37, while 2 had hyperacidity. In 77 cases suspected of gastric ulcer there was hyperacidity in 19 and normal pepsin findings in 72, with hypersecretion in 23.

Ugeskrift for Læger, Copenhagen

August 17, LXXVIII, No. 33, pp. 1397-1442

65 *Insufficiency of Glands with Internal Secretion. (Insufficientia pluriglandularis.) K. H. Krabbe.—p. 1399.

65. **Pluriglandular Insufficiency.**—Krabbe describes the case of an imbecile, now 18 years old, who presents a long array of symptoms characteristic of deficiency of the internal secretion from a number of ductless glands, such as pigmentations, sclerodactylia, microcephaly, retention of teeth and senile changes in the teeth, cryptorchidism, aphasia, achylia, atrypsia, renal diabetes, latent tetany and lymphoblastosis, with various other metabolic, nervous and trophic disturbances, including scanty growth of hair and senile aspect. This list of anomalies includes some we are accustomed to see from insufficiency of the thyroid, of the parathyroids, suprarenals, testicles, and perhaps from the pancreas, but the picture of insufficiency is not complete for any of these organs. The special feature of the case is the combination of the infantile and the senile. He describes the case mainly to illustrate the necessity for examining the function of each of the ductless glands in suspicious cases, the growth of hair, the skin, the genitals and the conditions of growth, roentgenoscopy of the hypophysis, examination of the teeth, the epiphysis lines, and bones of the wrist, microscopic examination of the blood, the blood pressure, sugar in the blood and in the urine and, finally, the electric responses of the muscles and their excitability and the mental status. By determining early enough any deviation from normal in these findings, we may be able to start the proper treatment in time to ward off irreparable damage. Although to date only thyroid and ovary extract treatment has given unmistakably favorable results, yet there is reason to suppose that time will enlarge the list of effectual therapeutic agents of this kind, both for monoglandular and for pluriglandular insufficiency. The way to hasten this is by careful study of the syndromes involved.